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Paper Industry Experiences Trying Year

While Volume of Business Transacted During First Half of 1930 Was Satisfactory, There Was a Decided Slump In the Latter Half of the Year—Production of Paper Decreased Approximately 9 Per Cent Below 1929, While Consumption Fell Off About 10 Per Cent—Value of Exports Was 18 Per Cent Lower—Brighter Outlook

By H. J. Laughton, Associate Editor of the Paper Trade Journal

CONSIDERING the general curtailment of business during the year 1930, the paper and pulp industries made a fairly satisfactory showing and were less seriously affected than most other large and important industries. The volume of paper business transacted during the first six months of the year was well up to the average of the corresponding period of 1929. However, during the latter half of the year a decided slump was experienced, and, in many instances, profits which had been made in the first half of 1930 were practically swallowed up.

The outlook for the paper and pulp business in 1931 is considered somewhat brighter by many leaders in the industry, who anticipate an improvement in general business conditions, which would undoubtedly be reflected in the paper trade.

Output of Paper and Pulp Lower

The statistical department of the American Paper and Pulp Association estimates the production of paper in 1930 at about 9,962,499 tons, as compared with 10,894,000 tons for 1929, which is a decrease of approximately 9 per cent. Consumption of paper made in the United States was estimated at about 10 per cent below the level of 1929. In most instances throughout the year, production and consumption have been fairly well balanced and accumulations of stocks have not been as excessive as in many other industries.

Total production of wood pulp in the United States during 1930 was estimated to be 5 per cent lower than in 1929 and the total imports for the year were estimated to be 4 per cent below the level of the preceding year. Imports of ground wood and bleached kraft increased, although the tonnage of the latter was small. Imports of sulphite pulp were about 6 per cent below the level of 1929, while kraft pulp imports were about 12 per cent lower.

Exports of Paper Decreased Heavily

Affected by the world wide depression and declining prices, exports of paper and paper products from the United States decreased rather heavily in 1930 as compared with the preceding year. Total exports of paper and paper products in 1930 were valued at $30,401,759, as compared with $37,086,009 in 1929, or loss of 18 per cent.

It is pleasing to note that an outstanding gain was registered in exports of fiber insulating lath or board, which practically doubled, amounting to $2,008,503. The only other gain worthy of note was in the exports of greaseproof and waterproof papers, which were valued at $741,557, compared with $526,281 in 1929, or an increase of 40 per cent.

Exports of wall board of paper or pulp registered the heaviest loss, amounting to less than one-half of the preceding year's record. Exports of surface coated paper took the next biggest backward step, being 45 per cent under those of last year, followed by news print, which declined from 37,390,727 pounds in 1929 to 20,408,300 pounds in 1930. While our exports of this commodity to Europe increased 70 per cent and slightly to Cuba, those to South America dropped from 14,979,796 pounds in 1929 to 4,339,588 pounds in 1930, and were 30 per cent lower to the Philippine Islands.

Other losses occurred as follows: papeteries and other writing paper, 30 per cent; boxes and cartons, 26 per cent; cash register and adding machine paper, vulcanized fiber sheets, strips, rods and tubes, bristol and bristol board and other paper board, each 23 per cent; wall paper and overissue and old newspapers, 20 per cent; sheathing and building paper and book paper, not coated, each 15 per cent. Envelopes and tissue paper were 13 per cent lower and paper bags and blotting paper, each 11 per cent.

Demand for News Print Declines Sharply

Total North American output of news print paper in 1930 was 4,082,678 tons, of which 2,499,631 tons were made in Canada; 1,281,502 tons in the United States; 287,259 tons in Newfoundland and 14,286 tons in Mexico. The Canadian production was 8.4 per cent less than in 1929 and the United States output was 8 per cent less than in the preceding year. Production in Newfoundland gained 12.4 per cent but there was a 23.5 loss in Mexico, making a total North American decrease of 312,605 tons, or 7.1 per cent.

The price situation continues unsatisfactory and there were many reports of concessions on large tonnages. Both the International Paper Company and the Canada Power and Paper Company have announced that there will be no change in the prevailing price of news print as applied to 1931 contracts. Some of the other companies, however, have admitted quoting competitive prices and conditions to customers and there seems little doubt that anything but a uniform price is prevalent.

Faced with declining consumption and increased capacity, leaders in the industry have recognized the need for consolidations,

so that production might be more effectively curtailed, costs of production lowered and ruinous price competition avoided. Considerable progress has been made in this direction. It has long been regarded that the Canada Power and Paper Corporation and the Abitibi Power and Paper Company would merge, and it is generally accepted that negotiations to that end have been proceeding for months. There is also talk of the International Paper Company's mills in Canada being brought into the merger, as well as the Backus-Brooks groups, and the St. Lawrence Corporation.

Fine Papers Held Up Well

The fine paper industry had the distinction of being the only division of the paper industry which retained any semblance of stability during 1930. This was particularly true of the mill water-marked lines, both of rag content papers and sulphite bonds. The tonnage from other grades not regularly making bond papers, however, brought about an upset condition on the lowest grades of unwater-marked sulphite bonds.

Business done by the fine paper mills for the entire year of 1930 was approximately 80 per cent of normal, and the manufacturers anticipate that in the present year it will be between 80 per cent and 90 per cent. As in other industries, the first half of 1930 showed a satisfactory volume of business but the last six months of the year brought down the average considerably.

Standard mill lines of papers which were backed by individual mill advertising as well as those backed by co-operative group advertising, fared the best in the distribution of business. The rag content paper advertising has proved of material worth to the group of manufacturers sponsoring the campaign and their percentage of orders has undoubtedly been kept up above the level where it would have been had it not been for this co-operative advertising and sales effect.

Production of fine papers in 1930 is estimated at 480,000 tons, a decline of 88,000 tons or 15 per cent below the 1929 record figure. The output of cover paper in 1930 declined about 3,900 tons, or 14 per cent below the 1929 record figure. Cover paper production has not shown a large gain, however, in the last twenty years.

Book Paper Industry Suffers Severely

Due mainly to the book paper mills having to operate on short time, manufacturers made efforts to improve their running condition by cutting prices, which resulted in a serious decline over the past year. At the close of 1930 prices were ranging from $5 to $7 a ton on all grades below prices that were in effect at the beginning of the year.

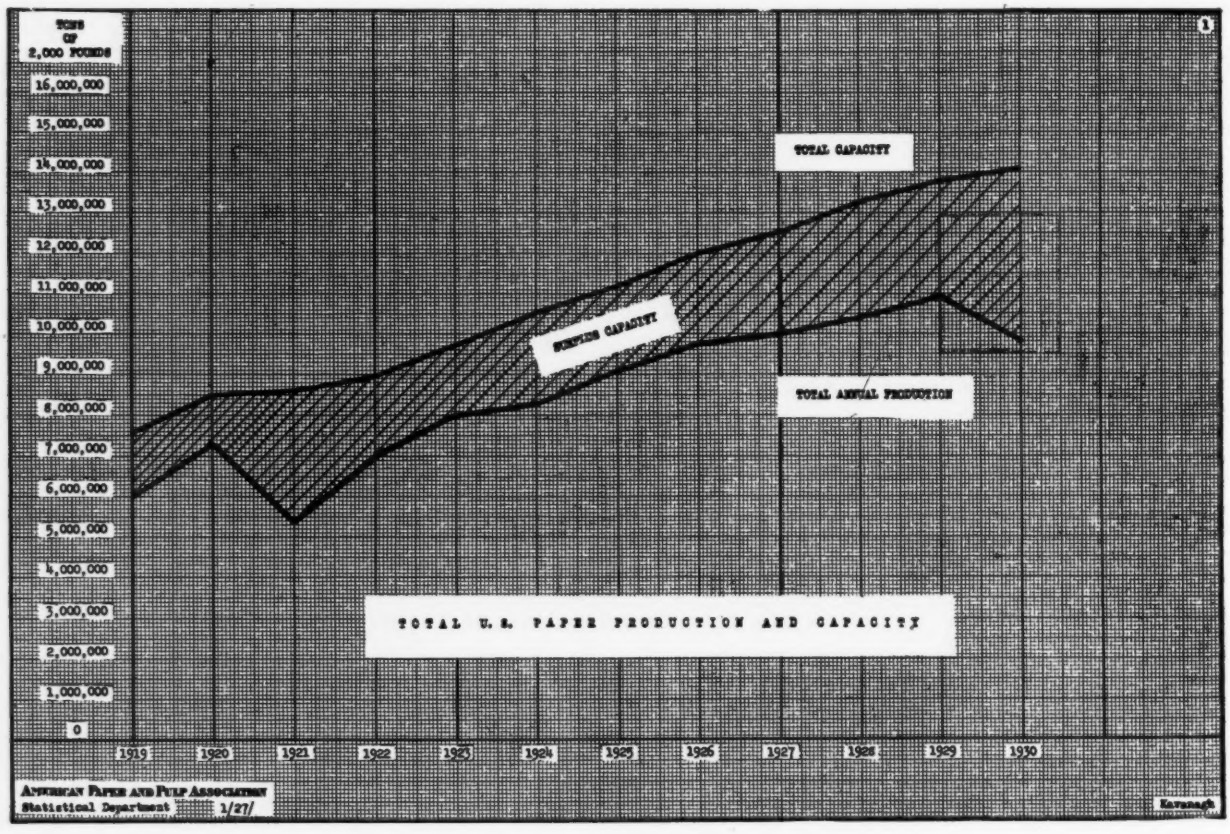
During the first six months of 1930 production was almost up to normal but for the last six months of the year the book paper mills were only able to operate at approximately 70 per cent of their normal productive capacity. If there had been a better demand for the various grades made by the book paper mills, production could have been further increased by 10 or 15 per cent, without difficulty.

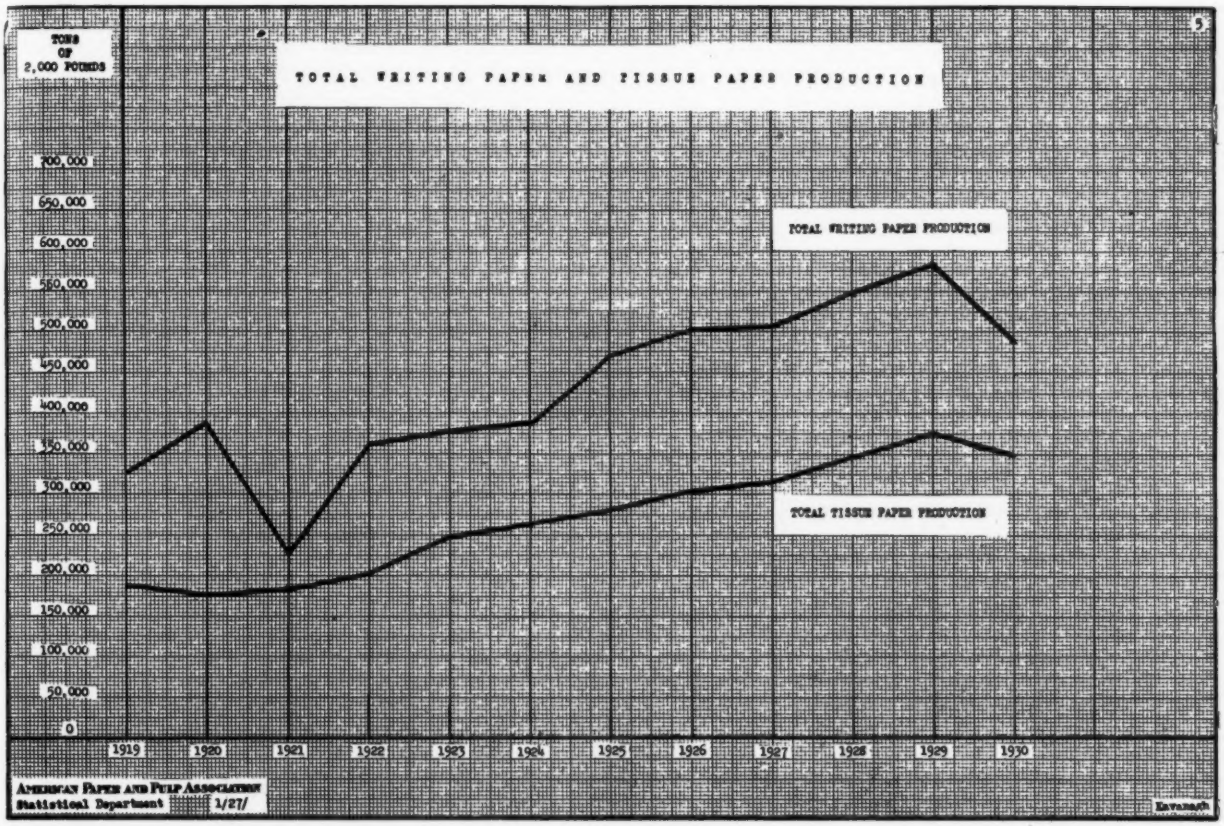
Three new machines were installed during 1930, with an estimated daily capacity of 170 tons. The output of these three machines, added to the 1929 productive capacity, which was estimated at 1,725,000, would bring the total productive capacity to-date up to 1,755,000 tons, which is considerably more paper than the market would have taken up under normal conditions.

No new machines have been reported to be installed during 1931 and should general business improve, there should be an improved condition in book paper lines, but it is doubtful whether there will be a great expansion in demand for book paper before mid-summer or early autumn.

Coarse Paper Industry Faces Changes

Although the past year in the coarse paper industry was very unsatisfactory, a few sulphite and kraft specialties were profitably marketed. The industry was probably saved from greater chaos by the switch to all kraft liner board by some of the low cost Southern





kraft mills. The sulphite division weathered the year better than the kraft section, thanks to intelligent curtailment of output.

Tonnage of coarse paper consumed as standard wrapping paper declined slightly in excess of the decline in the general movement of commodities. This decline is generally attributed to the further inroads of paper bags, envelopes and containers. The trend is noticeable in both kraft and sulphite used for the various grades of wrapping paper.

The coarse paper industry is believed to be entering a decade that holds great possibilities that may alter conditions to a considerable extent. Those members of the industry who lead the way to new uses, in or out of the present markets, will undoubtedly prove to be the organizations that are balanced and progressive. Incidentally, it is worth of note that of all the new uses for any kind of paper, the greater proportion today are mechanical and not cultural.

It is predicted that the consumption of kraft fiber, bleached and semi-bleached, and unbleached in this country will exceed 2,500,000 tons in 1940. Given sound management, those organizations who distribute kraft at a profit during the present decade will unquestionably be the future leaders of the industry.

Paper Board Industry Irregular

While the year 1930 opened favorably for the paper board industry, it ended with an actual loss for the major divisions. It is estimated that production of box board was about 10 per cent below the output for the preceding year. Box board prices of all grades fell to the lowest level experienced in many years, due mainly to the falling off of demand. The average decline was $6.60 below the previous level.

There was a loss of 5 per cent on container board. Corrugated container declined 3.2 per cent in volume and solid fiber 10.7 per cent, compared with the preceding year. However, the container industry achieved greater diversification and there was a better balance of volume between the industries served than heretofore. Lowering of prices in the container industry naturally resulted in lesser cost for the box maker.

Tonnage of board made for folding box was 3.8 per cent less in 1930 than in 1929, but due to the lighter weight per 1,000 square feet, a greater number of cartons were produced per ton than in any previous year. The low prices of box board aided the folding box manufacturers in extending the use of their cartons among prospective customers formerly deterred by the high cost.

Increase in plant capacity planned in advance has for the most part been brought to completion and the urge for decreased cost has been accomplished by speeding up existing operating efficiency. From the standpoint of sales lower price levels have made possible the development of new fields.

Chemical Pulp Demand Was Disappointing

While there were indications of fairly satistactory business in the chemical pulp market during the first half of 1930, there was no really great activity experienced throughout the entire year. Both buyers and sellers adopted the policy of practicing the strictest economy. This method of trading had a detrimental effect on the pulp industry.

In the latter half of the year competition was intense and the question of price was evidently of minor importance where large tonnages were involved. In many instances quotations declined to levels where the actual cost of the product was not even covered. Despiite this condition, accumulations increased until pulp manufacturers, the world over, found it necessary to curtail output.

Mechanical pulp prices were steady to firm during the year, due mainly to scarcity of water in various parts of the world and curtailment of production by agreements between manufacturers in Sweden, Norway and Finland. Fluctuations in prices were very slight compared to the fluctuation of prices on the different grades of chemical pulp.

Quality of domestic chemical pulp has been improved considerably, particularly bleached sulphite manufactured on the Pacific Coast. This stride in the Far West pulp industry is considered a noteworthy achievement.

Pulpwood was imported from Russia last year. Both quality and prices were reported satisfactory, until domestic and Canadian dealers in pulpwood were compelled to meet this foreign competition.

Keen Competition Affects Chemical Market

Falling off in consumption by practically all large chemical using industries caused considerable price reductions on most of the leading chemicals used by the pulp and paper mills. While conditions have been difficult, due to the general business depression, chemical inventories are now considered as below normal and the chances are that there will be few major price declines in the present year.

For the balance of 1931 a steadier market tone is anticipated by the chemical industry. This has been shown during the past few weeks in the price trend of several leading items, especially in such important paper making chemicals as soda ash, caustic soda, sulphate of alumina and chlorine. The manufacturers have been successful in bringing about a more stabilized market, although several of the leading factors found it necessary to withdraw all quotations for a time in order to put an end to unsettled conditions.

The price of salt cake declined considerably from last year's quotations, but the lessened demand from the consuming industries was in part offset by curtailment of production due to changes in the acid-making process. While shipments of sulphur fell off during 1930, especially for export, the price remained without change and contracts have been booked on the same basis as a year ago.

Paper Stock Conditions Irregular

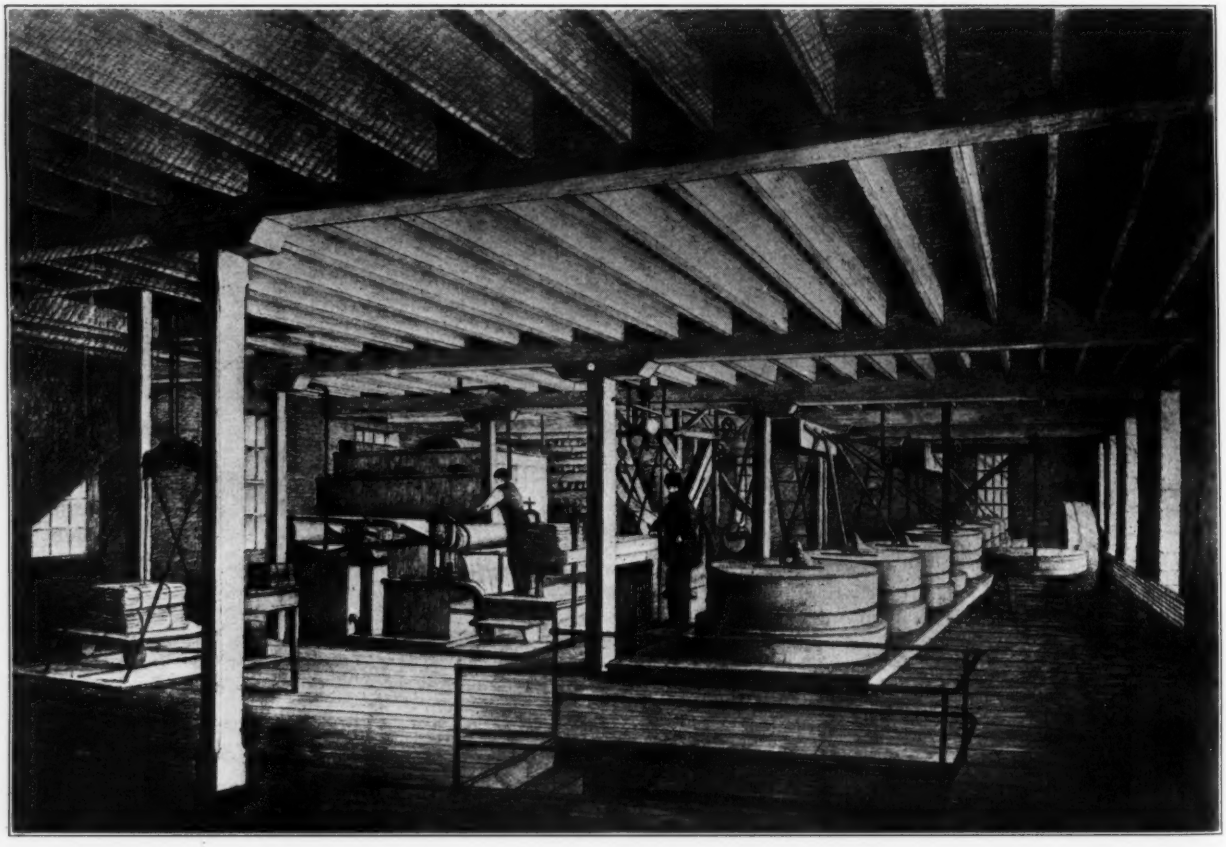
Waste paper dealers worked strenuously last year with little recompense. While the volume of business was fairly satisfactory, warehouses were cluttered with accumulated stocks, forcing the packers to sell at any old price, and consequently the market was very unstable. Quotations on the lower grades in particular, were far below normal.

Mixed papers hit zero last winter and hovered around that point all year. The highest that the mills paid throughout the year was from 30 to 35 cents per 100 pounds, a price that in other years would represent the low of the twelve months period. The condition of the market was such that it practically eliminated the packing of containers and print manilas.

Ledger stock sold at a price below that of good book stock, where there is ordinarily a differential of $5.00 per ton, and books sunk to levels that had not been reached since 1921. Hard white and soft white shavings, however, were in good demand all the year, and fluctuations in these two grades was slight compared to the rest of the market.

The action of the Boston waste paper packers in burning accumulations of their paper stocks caused considerable comment. The demonstration was said to be the result of a condition where the packers figured they were better off burning the waste paper than attempting to sort and pack at prevailing prices. New York packers followed their example and obtained permits for the burning of waste paper at the city incinerators.

New and old rags were only in moderate demand during 1930. The request from the fine paper mills was not sufficient to hold up the price of new cuttings and high grade old rags, and they suffered serious declines over the year. Roofing and fiber mills were quiet and lack of their purchasing power was felt.



VIEW IN GRINDER ROOM OF CLIFF PAPER CO., NIAGARA FALLS, N. Y., IN 1883

Fine Paper Industry in 1930 Evidenced Stability

This Condition Made Possible Through Sound Inventory Policy and Financial Resources of the Mill—Advertising and Intelligent Marketing Also Played Important Parts in the Comparatively Good Record for the Year of this Division of the Paper Industry—Business for 1930 Was About 80 Per Cent of Normal and Business For Current Year Is Expected to Be Between 80 and 90 Per Cent of Normal.

By E. H. Naylor, Sec.-Treas., Writing and Cover Paper Mfrs. Assn.

DURING 1930 the fine paper market had the distinction and good fortune of being the only grade of paper which had any semblance of stability. This was not true of the lowest grade unwatermarked sulphite bonds where the tonnage from other grades not regularly making bond papers brought about an upset condition, but on the mill watermarked lines—both of rag content papers and sulphite bonds—there was a sensible stability which was both reassuring and profitable in a time of uncertainty when irresponsible competition ruled over reliable judgment.

Sound Inventory Policy

This condition was made largely possible through the financial resources of the mills, and in addition these mills had a sound inventory policy. Production is constantly adjusted to demand and the idea of "lower costs through full production regardless of demand" is a theory that has long since been discarded by these mills as fallacious and uneconomic.

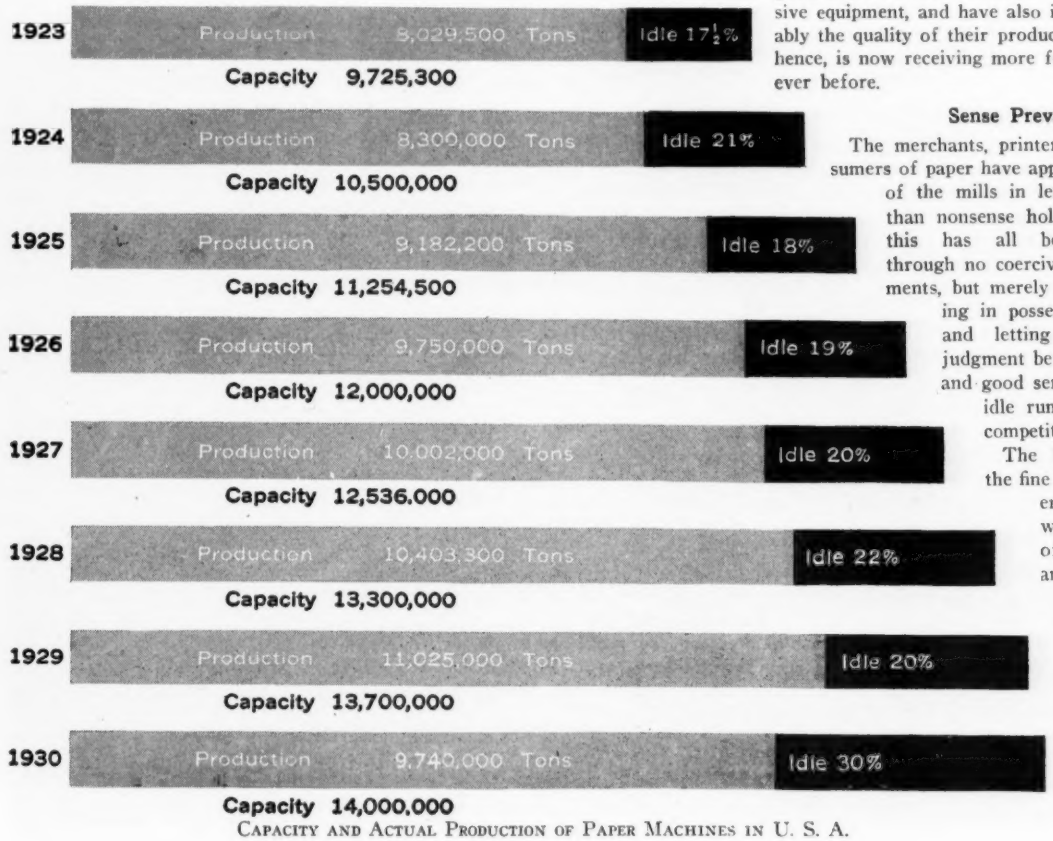
The percentage of profit on sales over the last ten years and the earnings on capital invested by the mills have been modest to say the least. There is only one turnover of capital in a normal year, and with the risks involved the returns are very limited. In 1930 the capital turnover was only 0.8.

Fundamental Cost Not Affected

Since 1921 increases in cost of raw materials have been absorbed by the mills and not passed on by the manufacturers, so that the recent declines in the prices of pulp and rags have been back to where the original liquidation took place, and therefore have not in any way affected the fundamental costs on which the present market was based. Furthermore, there has not been any marked reduction in the prices of the higher grade materials as used by those mills.

Mill costs are known and are today relatively high. Labor is no less and will not be. Overhead, due to curtailed production in the last six months of 1930, also knocked into a cocked hat any margin of profit, so that the mills found their 1930 earnings about cut in two from what they were in 1929.

Furthermore, since 1925 the fine paper mills have put back a good share of their earnings in new and expensive equipment, and have also increased considerably the quality of their product. The consumer, hence, is now receiving more for his money than ever before.



CAPACITY AND ACTUAL PRODUCTION OF PAPER MACHINES IN U. S. A.

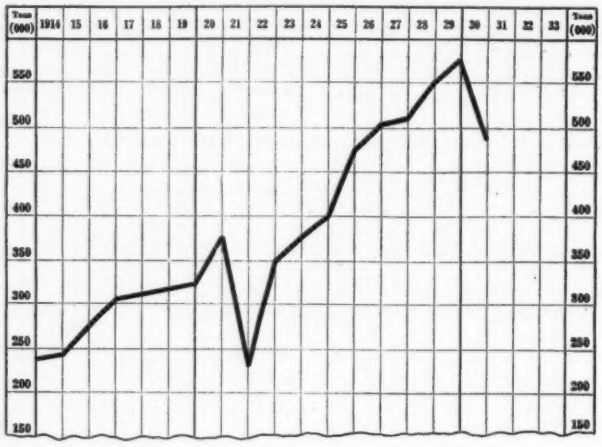
Sense Prevails

The merchants, printers and direct consumers of paper have appreciated the policy of the mills in letting sense rather than nonsense hold the reins. And this has all been accomplished through no coercive action or agreements, but merely through mills being in possession of the facts and letting their individual judgment be governed by facts and good sense rather than by idle rumor and emotional competition.

The business done by the fine paper mills for the entire year of 1930 was about 80 per cent of normal, and they anticipate that in the year 1931 that it will be between 80 per cent and 90 per cent, although if it could exceed the latter figure, so much the better. As in all industries, the first

half of the year 1930 showed a fairly good business but the last six months brought the average down considerably.

It is interesting to note that standard mill lines of papers which were backed by individual mill advertising as well as those backed by co-operative group advertising fared the best in the distribution of business. The rag content paper advertising has been of material worth to the group of manufacturers sponsoring it and their percentage of orders has undoubtedly been kept up above the level where it would have been had it not been for this cooperative advertising and sales effort. About the middle of January of each year most of the leading industries of the country begin to feel improvement in the demand for their products, and this is particularly true of writing and cover papers. We hope that this demand will continue through until the late spring when possibly there will be the usual summer recession with a marked increase in orders next fall.



TOTAL U. S. WRITING PAPER PRODUCTION

	Tons
1914	21,700
1920	25,400
1921	16,400
1925	24,300
1927	26,300
1929	28,100
1930	24,200

Production in 1930 declined about 3,900 tons, or 14 per cent from the 1929 record figure. The output of cover paper has not shown a large gain in the last twenty years. The more recent average growth has been about 4 per cent a year. The interruption in this growth in 1930 was not nearly as great as the sharp drop which occurred in 1921.

Price Guarantees

Some of the mills have shown their individual interpretation of the stability of the market by individual guarantees of prices against declines. There is every indication that if there were stability last year based on conditions surrounding fine papers, there should be stability in 1931 because the same facts and factors are still existent and even more influential in their effect upon a mill finding it necessary to maintain its present quotations in order to show even a small margin of profit.

Trend for Sixteen Years

The chart presented herewith shows the trend of writing paper production for the entire industry in the last sixteen years. Production in 1930 is estimated at 489,000 tons, a decline of 88,000 tons or 15 per cent from the 1929 record figure. This brings production back to a level somewhat above the 1925 output, which was then considered a very good year.

Changes in Production

It is interesting to look back to the previous depression to note the changes in production at that time. In 1920, which was a boom year, writing paper production was 375,000 tons. In 1921, a year of serious depression, production fell 38 per cent to 231,000 tons a decline of 144,000 tons in a single year. In 1922, a year of business improvement, production increased 119,000 tons or 52 per cent. In the following year, 1923, writing paper production attained a new high record of 377,000 tons.

New High Records Again Soon

It is unsafe to make any definite forecasts as to the probable production in 1931 and 1932, but if there is any value in precedent, it is logical to expect that after a year or two of diminished production to compensate for a too rapid increase in the past, production will again achieve new high records. This assumption is based on the increase in population as well as an increase in per capita consumption of paper because of the increasing complexity of our modern social and business life.

Cover Paper

The trend of cover paper production in the last sixteen years is indicated in the following:

During 1930 paper production in the United States returned to the 1926 level of approximately 9,750,000 tons, which was then a record year. In 1926 the capacity of the industry was 12,000,000 tons, which was operated at 81 per cent. In 1930 the same amount of production was available to an industry of about 14,000,000 tons capacity and consequently operations averaged only 70 per cent.

It is interesting to note that in 1921 operations averaged but 63 per cent of capacity.

Paper production in 1930 is estimated to have declined 12 per cent. Pulp production declined only 3 per cent, and pulp imports were also 3 per cent less than in 1929.

These figures indicate quite clearly the basic reasons for the demoralization of the sulphite and kraft pulp markets. The expansion in the last few years has been considerably beyond the needs of the industry and in most of 1930 production was not adjusted to declining paper production.

Should Study Market Carefully

There will be some hope in the situation when manufacturers will study the possibilities of the market as carefully as they have studied the technique of production. For many years business has started with production, followed by an effort to dispose of the product in the best possible way. Business in the future is more likely to be conducted on the basis of a study of market requirements and demands, to be followed by a production adjusted and constantly attuned to the needs of the consumer.

MICHIGAN PAPER CO. STARTS BOILERS

Test fires are burning under the new boilers of the Michigan Paper Company's power plant in Plainwell and according to George W. Gilkey, president, steam should be turned on before March 1. The new boiler house is of steel and concrete and is equipped with two 600 horse power boilers at this time. The structure is large enough to house additional boiler equipment. The present installation does away with six old boilers.

The Michigan Paper Company closed 1930 in good financial condition. Current assets to current liabilities are $478,692.76 to $67,-128.20, or better than 7 to 1. The capital is $1,000,000 with a bonded indebtedness of $280,000 and profit and loss surplus of $258,466.81. Net profits for the past year were $50,345.20 and a one percent dividend was paid on the capital stock.

The board of directors includes: Guy Woodruff, Lewis H. Kirby, W. J. Lawrence, H. C. Jackson, Kalamazoo; George W. Gilkey, Clare Wagner, H. J. Mesick, O. O. Stone, Plainwell; E. W. Stone, Allegan and Henry Pelgrim and A. C. Kappel, Holland. Gilkey continues as president, Clare Wagner as vice president while H. C. Jackson succeeds Carl Handy as secretary. F. L. Brown is assistant secretary-treasurer.

Book Paper Mills Add to Productive Capacity

Three New Machines Were Installed During Past Year With Estimated Daily Capacity of 170 Tons, Bringing Total Capacity of Industry Up to Approximately 1,775,000 Per Year—During First Six Months of 1930 Production Was Almost Normal But in Latter Six Months of Year Mills Were Only Operated at About 70 Per Cent of Full Schedule—Prices Were Down $5 to $7 Per Ton at End of Year.

Written Specially for the Annual Number of the Paper Trade Journal.

ON account of the depression, the book paper industry for 1930 suffered severely, just as most other lines of business. The depression was not so evident in the early part of the year. For the first six months production was almost up to normal, but for the latter six months of the year the book paper mills were not able to operate more than about 70 per cent of what might be termed their normal productive capacity. Of course with an increased demand for the grades of paper made by the different book paper mills, production could have been further increased 10 per cent or 15 per cent without any trouble.

New Machines Installed

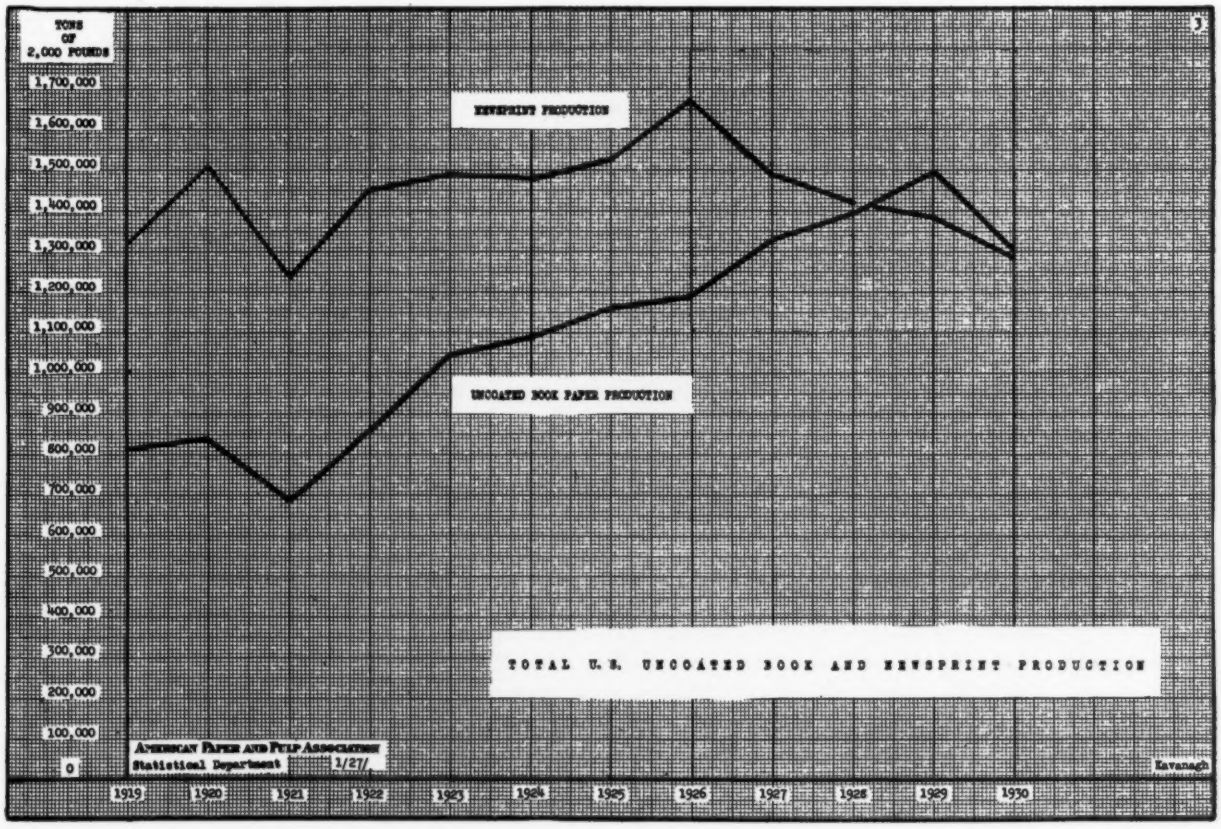
During 1930 three new machines were installed with an estimated daily capacity of 170 tons. This compares with the installation of five new machines during 1929 with a capacity of about 245 tons. The production of these three new machines, added to the 1929 productive capacity which was estimated at 1,725,000 tons, would bring the productive capacity up to 1,775,000 tons, which is considerably more paper than the market would have taken up under normal conditions, and certainly a great deal more than could have been consumed during a year of depression such as we have just experienced.

Quotations Decline

Naturally mills operating on short time made an effort to improve their running condition by cutting prices, which has meant a serious decline in the price of book paper over the year of 1929. At the close of 1930 prices were ranging from $5 to $7 a ton on all grades of book below prices that were in effect at the beginning of 1930.

Outlook for Future

As far as can be ascertained there are no new machines to be installed during 1931 and if business conditions improve as we all hope they will, there will be an improved condition in the book paper line, but present indications seem to be that there will not be a great improvement in the demand for book paper until midsummer or early autumn.



Coarse Paper Tendencies During Past Year

While Several Sulphite and Kraft Specialties Have Been Profitably Marketed, the Condition of the Industry Has Generally Been Unsatisfactory—Due to Intelligent Curtailment of Output and Intense Study of Markets Sulphite Division Weathered 1930 Better Than Kraft Section—Switch by Some of Low Cost Southern Kraft Mills to All Kraft Sulphate Test Liners Proved of Surprising Importance.

By Endicott Rantoul, Vice-President of the Salesmen's Association of the Paper Industry

FROM the coarse paper standpoint the year 1930 has been, to say the least, very unsatisfactory. A few sulphite and kraft specialties have been profitably marketed. The switch to all kraft liner board by some of the low cost Southern kraft mills has perhaps saved the coarse paper industry from an even greater chaos.

The sulphite division, through intelligent curtailment of production, continued from the preceding year, and the intense study of markets has weathered the year far better than its younger brother the kraft industry.

Some of the larger as well as the smaller units have had to close down entirely and their reopening on the same grades in the future is problematical. The immediate future for sulphite wrappings is not bright and even with an accelerated consumption the present year can expect little improvement in profit.

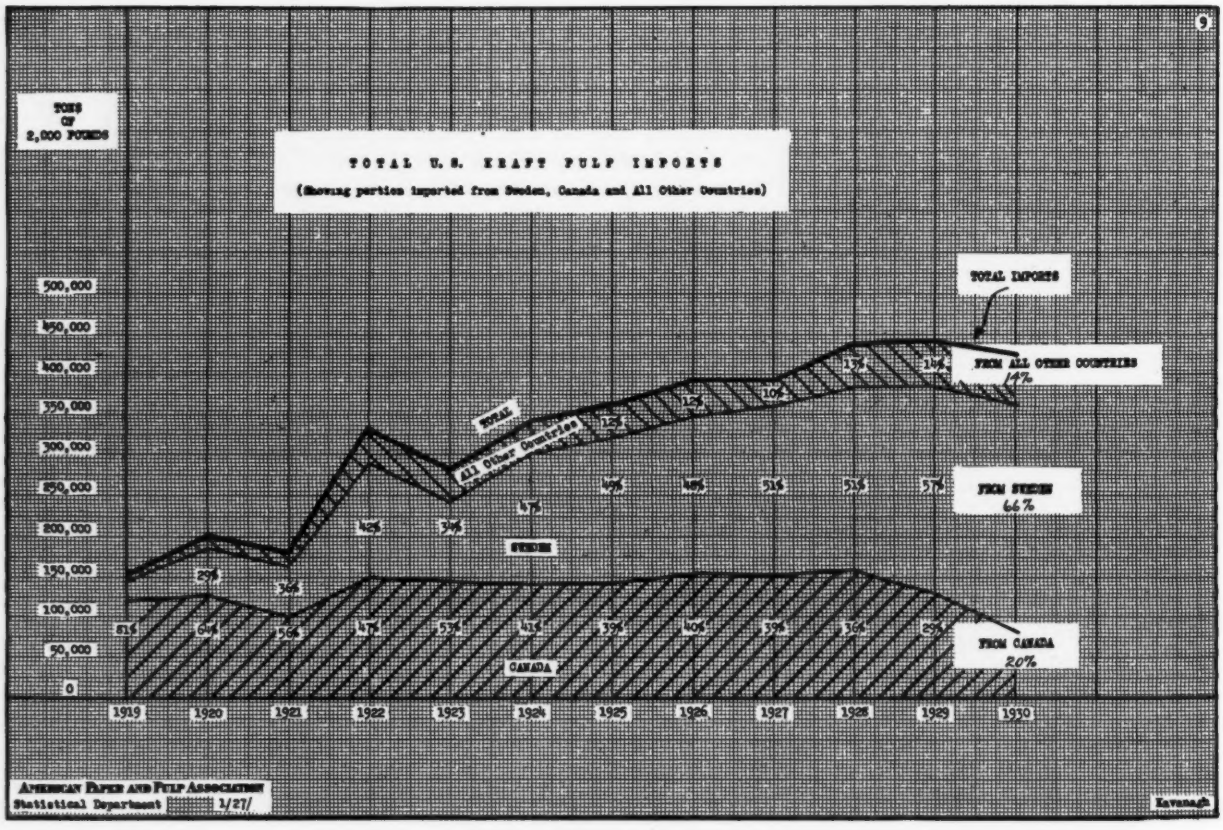
Wrapping Paper Consumption Declines

The tonnage of coarse paper consumed as standard wrapping paper has declined slightly in excess of the decline in the general movement of commodities. Presumably this has come about through further inroads of paper bags, envelopes, and containers. The trend is noticeable in both kraft and sulphite used for wrapping.

We are today slowly recovering from a world business depression and a rather radical revaluation of commodities. We are nevertheless entering a decade that holds tremendous possibilities that will alter our business and our industry to a point beyond present conception.

Kraft entered the first quarter of the present century at the ideal time from the standpoint of mass production. From 1908 to 1925 many mills and many organizations introduced and developed the uses of kraft pulp and paper. The distribution was that of a specialty and was ably and successfully accomplished with a satisfactory profit to the industry and to the various elements in the channels of distribution.

By 1925 kraft paper had become a standard commodity in the wrapping paper and paper bag fields, and had about reached an annual consumption of a half million tons of which four-fifths was distinctly a commodity and the balance a specialty. Kraft pulp was, during this same period, also entering the board field and had become a material factor in the furnish of standard test liners.



Kraft Sulphate Test Liners

As the Kraft industry entered the second quarter of the century the Hummel-Ross Fibre Corporation introduced an all kraft sulphate test liner, which was to become in five years a commodity of surprising importance to the industry. The industry has changed very radically since 1925.

Today many large units have been built in the South and on the West Coast; a number of the Middle Western and Eastern units have doubled their capacities so that of board and paper in 1930 over one million tons were produced and sold, an increase of well over a hundred per cent in five years.

Unfortunately this period—1925 to 1930—in spite of tremendous profit to business in general throughout the world, has been perhaps the most unsatisfactory in the entire history of the kraft industry. Production remains in about as many hands as in 1925, but unfortunately intelligent mass production at a profit has not kept pace with mass production.

Mass Distribution

Mass distribution is a relatively new science developed during the present century to meet the requirements of mass production. The kraft industry has stepped from the field of specialties to commodities and in the next five years will enter many more fields as a standard commodity.

Bleached and semi-bleached kraft pulps, papers and boards (all sulphate) are today disturbing thoughts to almost all branches of the paper industry. A great deal of excellent and intensive manufacturing research on these problems has been undertaken in every section of the country and in Europe and Canada. The immediate possibilities in many fields not now known to kraft are most pertinent and interesting.

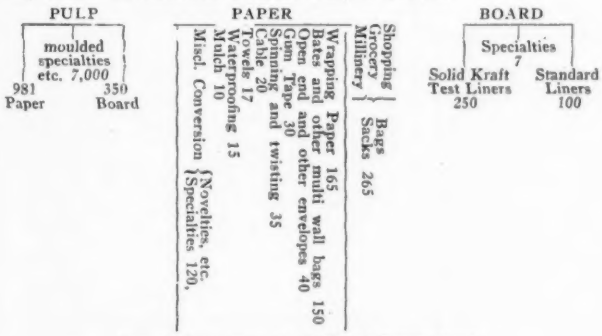
In February 1931 we are still in the infancy of kraft development and it behooves the industry to keep a better balance of production and distribution either by curtailing production or modernizing distribution, or a little of both.

If the individual units of the industry are not able to alter the present unbalance, then groups with similar problems must pool their interests for joint curtailment of production or joint development of modern merchandising and distributive methods on a scale commensurate with present mass production.

It is not as easy to spend money on intangibles as it is on buildings and machinery; but money spent this year on merchandising, distribution, sales research, advertising and a well-knit organization for mass distribution will be the better investment.

Solid kraft board starting at zero in 1925 has passed 250,000 tons in 1930.

Kraft pulp is the real key to the industry; a chart presented on the opposite page and showing the combined production and imports is rather surprising. Kraft wrapping paper imports and exports being less than 10,000 tons are not shown. An estimate of the major uses of unbleached Kraft Pulp is shown.



Sound Investment of Great Importance

One cannot look at the above figures and not know that hundreds of specialties will be developed and that tens if not hundreds will become commodities in various fields. Those members of the industry, be they mill or distributor, who lead the way to new uses, larger uses, in or out of the present markets, will prove to be the organizations that are balanced and progressive. Sound management is today of far greater importance than capacity for production, capital or even location.

The kraft industry is fortunate in its membership in the American Pulp and Paper Association, the Southern Kraft Paper Association, and the National Kraft Paper Manufacturing Association. From these sources facts on which to base future policies must be drawn. The outside, yet intimate viewpoints of the three managers should greatly aid the industry in having an intelligent and informed management. Associations in the paper industry have rarely been used by their members to the fullest possible extent. Now is the time to do so.

In closing, may I point out that perhaps of all the new uses for any kind of paper by far the greater proportion are today mechanical not cultural. The consumption of kraft fiber, bleached and semi-bleached and unbleached in the United States, in my opinion, will exceed two and one-half million tons in 1940. Those organizations who have distributed kraft at a profit during the present decade will unquestionably be the leaders of the paper industry. It will require sound management.

COLUMBIAN CO. TO BUILD POWER PLANT

A complete new power plant which will lead to the erection at Bristol, Va., of an additional unit to manufacture chlorine gas will be constructed by the Columbian Paper Company, one of Bristol's leading industries, it was announced by H. Trumbower of Buena Vista, secretary-treasurer of the corporation. Mr. Trumbower was in conference here recently with W. I. Brunner, superintendent of the Bristol plant, and W. E. Biggs of the W. E. Biggs Engineering Company, Chattanooga. Contracts for much of the equipment were let last week. Plans are being prepared for the building and machinery foundations and it is expected that the contract for this work will be let on or about March 1.

Mr. Trumbower said the corporation will erect a complete new boiler plant, with three 600 horse power water tube boilers. Each boiler will be capable of developing 1500 boiler horse power with the use of steam pressure.

Contract for the boilers was let last week to Babcock and Wilcox Company, of Bayonne, N. J.

The boilers will be fired by multiple retort underfeed stokers. Nut and slack coal will be used. Contract for the stokers was let to American Engineering Company, of Philadelphia.

Contracts for boiler feed pumps and metering feed water heaters were awarded to Elliott & Company, of Geanette, Pa.

A concrete stack 210 feet high and having a diameter at the top of nine feet will be erected. The contract was let to Rust Engineering Company, of Pittsburgh.

Complete coal and ash handling equipment whereby all coal will be weighed as it enters the boiler room and ashes will be removed without the touch of human hand, will be installed. Contract for the coal equipment was awarded to Fairfield Engineering Company, of Marion, Ohio, and contract for the ash handling apparatus to the Allen, Sherman, Hoff Company, of Philadelphia.

The building will be 48 feet by 85 feet inside, with a basement 10 feet deep and the bottom chord of the roof truss on the main operating floor will be 40 feet above the operating floor level.

"The plant is being designed for steam pressure that will permit use of turbines to generate our own electricity," Mr. Trumbower said, "using the exhaust from the turbines in process work. In so doing we will be able to generate more electricity than we need at the present time and it is planned to build an electric bleaching plant to manufacture our own bleaching agents which we now buy elsewhere in the form of chlorine gas."

The new addition is being designed by the W. E. Biggs Engineering Company with general offices at Chattanooga. The firm has designed some of the most modern power plants in the South. W. E. Biggs, chief engineer of the company, will remain in Bristol during construction of the plant.

Year of Depression in the Paper Board Industry

Running Time of the Mills Only 3.9 Days As Compared With 4.6 Days of Running Week in 1929—Prices Decline to Lowest Level in Recent Years With .016 Chip Rolls Nominally Quoted at $32.50 as Compared With $39.40 Per Ton in 1929—Better Cost Methods and General Improvements, However, Are Enabling Mills to Adapt Themselves to Prices and Making Possible Development of New Fields.

By Grafton Whiting, Statistician of Paperboard Industries Association

THE year 1930 will be marked in history as a year of depression similar in many respects to 1921. The financial statements for the last quarter and for the year in total show the seriousness of the situation. General statistics indicate losses in volume from 10 per cent to 40 per cent in many industries, with an average of about 15 per cent. Added to the loss in volume has been the lowering of price levels and the inability to reduce costs sufficiently to maintain profits.

The box board industry has been more fortunate than many others in respect to the year's volume, but prices have fallen to such an extent that no gain has accrued.

There are four main divisions of the industry, namely:

Box board mills producing fiber board 12/1000 of an inch or over in thickness.

Container plants making corrugated or solid fiber shipping cases.

Folding box plants manufacturing collapsible cartons.

Set-up box plants supplying stiff or rigid boxes.

The first three of these are represented by the Paperboard Industries Association and the following resume deals chiefly with their experience during 1930.

Box Board Mills

In 1929 there was produced 3,580,000 tons of box board of all grades and although the final figures for 1930 are not as yet available, it is estimated that a decrease of 10 per cent or 358,000 tons will be found. During 1929 actual running time compared with full time showed 77 per cent or 4.6 days of running per week whereas in 1930 it was 65 per cent or 3.9 days. This reduction in operating time was partly off-set by an increase in the tons output per hour. Assuming a box board machine with 100 inch trim, the following is the average output in tons per hour.

1926	2.643 tons per hour
1927	2.739 tons per hour
1928	2.964 tons per hour
1929	2.984 tons per hour
1930	3.019 tons per hour

Added to the hourly increase in tonnage there has been a decrease in the weight per 1000 square feet of the average grade of board, and since fabricating of boxes is predicted on the area of the box blank, the mills have supplied material for more boxes during the year than a comparison of the tonnage figures would indicate.

Seasonal Variation

The demand for board varies with the season of the year with such regularity that an average performance can be stated. By reviewing the past five years, Chart I has been drawn to show the relative activity for each month. This is represented by the solid line and contrasted with it is the year 1930 shown as a broken line plotted in a similar manner. The five year average is given a value of 100 per cent and the monthly increase or decrease is indicated by the rise or fall above or below the heavy horizontal line. It will be noted that 1930 followed the seasonal trends, but at a lower level of activity, increasing in spread as the year progressed.

Supply and Demand

The daily capacity of a mill is the amount of board it would produce if continuously operated during 24 hours. By reviewing the output of a given mill and the hours of actual operation, the tons per hour can be ascertained. Multiplying by 24 gives the daily rated capacity, or by 144 for the weekly capacity. The statistical records received from the mills are based on a week's performance and by dividing the orders received and the production made, an expression in percentages can be had of the relation of demand and supply to rated capacity. Such a comparison is found on Chart II where the record of a large group of mills is consolidated into monthly averages.

The broken line represents incoming orders and the solid line, production. Where orders exceed production during any given period, the intervening space is left white. Where the reverse is experienced, the area is in black. During 1928 the white and black portions are about equal, whereas in 1929 and 1930 the black areas

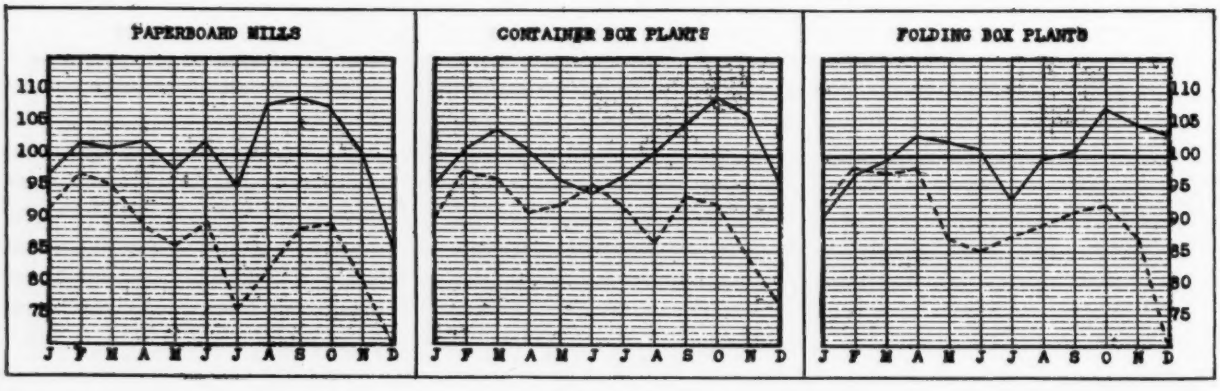


CHART 1

The operating time for a period of five years is consolidated by months and expressed as a percentage above or below the average. This is the solid line drawn on the chart. The actual running time for 1930 is treated in like manner and is shown by a broken line. It will be noted that the mill operations followed the usual trend but at a much lower level. The container division experienced an upturn during the summer months with a low point two months later than usual. Folding Box dropped in activity in May with gradual recovery from June to October. All 1930 lines averaged to be well below normal.

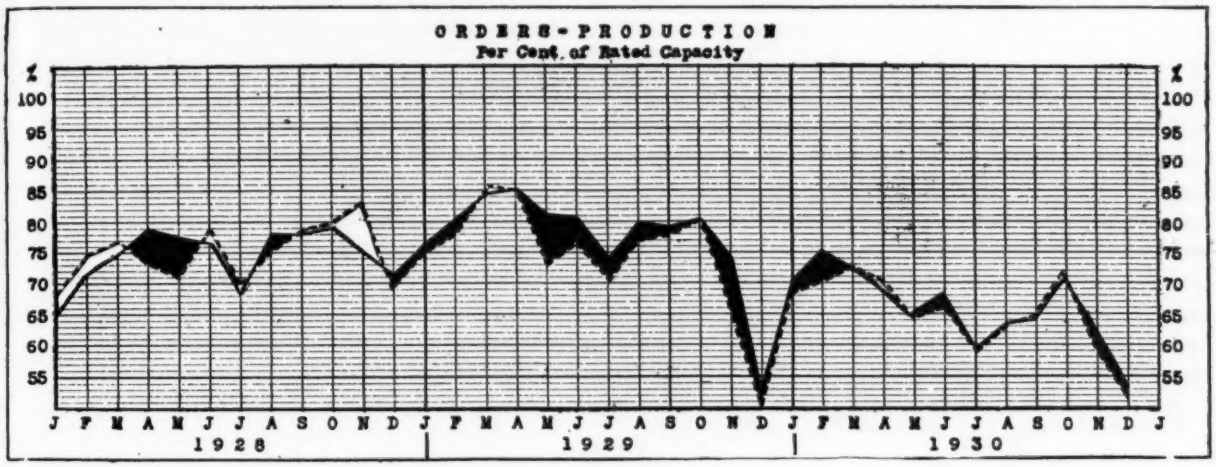


CHART 2

Rated capacity is the average production per hour multiplied by 144 hours to give the total rating for a week. The orders booked are divided by the rated capacity and expressed in a percentage. In like manner the production is figured as a percentage and both are here consolidated by months. The black areas indicate production in excess of orders and the white areas the reverse. It will be seen that production exceeded incoming orders throughout the year, constantly reducing the back log of unfilled orders on hand.

predominate. The unbalanced condition could have but one result —a continuous reduction in the volume of unfilled orders. At the beginning of 1929 the backlog of orders equalled 9.4 days run at capacity, whereas the close of 1930 recorded but 5.1 days.

Gain or Loss

To judge the contrast between orders and production by noting the white and black areas is apt to be misleading. To bring out the condition more clearly, Chart III is drawn in bar form with the periods of gain in orders over production shown rising above the base line in proportion to the extent of the gain (here termed "points") and the periods of loss below.

There have been two factors at work in disrupting the usual flow of business. First, the decreased demand from fabricators of boxes, due in turn to the depressed conditions experienced by their customers; and second, the rapid increase in mill capacity coming into the market from mills making Kraft liners. In the past 7 or 8 years an average increase in general box board demand has amounted to some 175,000 tons annually. In 1930, not only was this growth in demand lacking, but a decrease of some 350,000 tons was experienced, or a total of over 500,000 tons less than normal expectancy. However, during the same period potential capacity in all box board increased about 225,000 tons. Of this added tonnage some 150,000 was in the Kraft mills.

The term "Kraft" is used to designate mills producing a board from 60 per cent or more of sulphate pulp. Such board is used by container manufacturers to replace the jute liner formerly used in the construction of corrugated or solid fiber board for shipping containers. While the Kraft liner mills make no other form of box board, the gradual replacement of the jute liner has deprived the jute mill of a portion of the former outlet and forced them to seek orders for tonnage elsewhere. The folding and set-up box industry has felt the effect of this change in the constant downward revision of prices.

Box Board Prices

Box board prices of all grades have fallen to the lowest level experienced in many years, and in turn the prices of all grades of pulp, waste paper stock, and other materials required as furnish in making box board have suffered heavy declines.

BOX BOARD PRICE AVERAGES

Grades	Per Ton 1927	1928	1929	1936
Test Liners	$65.00	$57.70	$51.40	$40.65
Chip .016 Rolls	45.00	42.70	39.40	32.50
Single Manila Lined Chip	55.00	52.50	47.00	42.00
Newsboard 80 Pounds or Heavier	45.00	41.50	37.50	33.75
Average Loss		3.90	4.80	6.60

Prices are sensitive to the spread between capacity and demand. In the years 1927 to 1929 the increased capacity was partly offset by gains in demand, but not in sufficient volume to turn prices upward. In 1930 the capacity increase was met by a loss in requirements and prices responded with an average drop of $6.60 below the previous level.

Containers

Shipping containers are of two types, corrugated and solid fiber. Each is made of two outer facings or liners, and an inner member

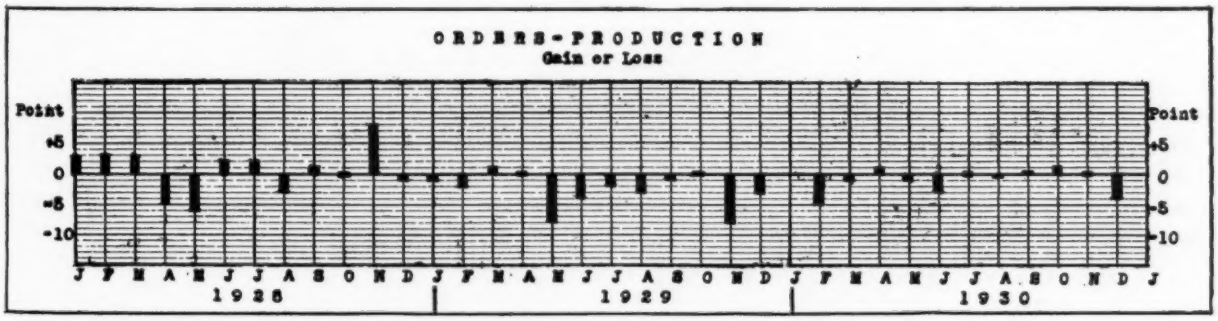


CHART 3

The spread between orders received and tonnage made as recorded on Chart No. 2 is not readily seen in that type of graph. To make this feature clearer, the bar form of chart is used with the difference termed "points." When orders are in excess of production the bars extend above the horizontal line and below when the condition is reversed.

fluted for corrugated and pasted flat for solid fiber. Both serve the same trade for the most part, but some commodities find better protection in the one than in the other. In 1930 corrugated lost 3.2 per cent in volume, while solid fiber lost 10.7 per cent compared with the previous year. A composite of the two gives as a result a loss of 5 per cent.

The container industry follows closely general business activity, but advances and declines to a lesser degree than found in general periods of prosperity and depression. Chart IV is drawn to show this comparison. The base or 100 per cent line shown in the chart is the normal activity found after reviewing some 30 years of business experience, only the last 8 years of which are reproduced. The areas above the line represent periods of prosperity and those below, of depression. The broken line running through the chart is the container activity composed of both corrugated and solid fiber manufacture. The figures upon which this is based have been corrected for seasonal variation in a manner similar to that used for the general business curve. During 1925 and 1927 the container line dropped because of competitive conditions within the industry, but soon reacted, compensating for the loss. From 1928 to date the trend has been closely in parallel with the turning points, coming almost in the same months. This would indicate that the container industry has achieved greater diversification and that there is a better balance of volume between the industries served than heretofore.

The demand for shipping containers is seasonal and varies as much as 20 per cent between the extremes. Chart I (second section) is drawn to show these changes with the solid line representing a 5 years' average and the broken line that for 1930. It will be noted that the peaks of demand are about one month later than found in the box board seasonal chart, and this is to be expected since box board is a raw material for the container plant and must be made in advance of the box fabricating operations. A contrast between corrugated and solid fiber activity is of interest since it tends to show the relative output of the two types of containers. Chart V gives this comparison with the solid line for solid fiber and the broken line for corrugated. The basis for the chart is the hours of actual operation divided by the normal or full week hours to represent the per cent of activity. It is not an expression of volume, but is closely in parallel with it, since the average output per hour is a consistent factor. It is true that each year finds greater plant efficiency and larger production per hour, but this growth applies almost equally to both corrugated and solid fiber.

The loss sustained by solid fiber in comparison with corrugated is due to the lower price of the latter, and the shifting by users where either type of box offers the needed protection in transit. A box made of corrugated board is somewhat lighter than one of solid fiber and where long freight hauls are necessary an added saving is found in the freight item.

Container Prices

Average prices per thousand square feet for corrugated boxes are as follows:

1927	$10.70
1928	9.04
1929	7.94
1930	7.34

Comparable figures for solid fiber boxes are not available, but during 1929 and 1930 they were higher in proportion to the corrugated box and their sales were restricted more particularly to commodities requiring this type of container.

The material from which boxes are made constitutes between 65 per cent and 75 per cent of their total cost, and in consequence, the lowering of prices in the board market resulted in a lesser cost for the box maker. This saving, however, was promptly passed on to the customer and a still further reduction was made until the margin of profit which formerly existed was exhausted and in many instances sales below cost were resorted to in order that sufficient volume might be obtained to avoid a shut down. Such has been the severity of the competition in the industry, and this in the face of but 5 per cent loss in total volume.

Folding Boxes

The folding box or carton differs from the shipping container in that it is used almost exclusively as an inner package for protection of a single article or a sales unit. It is made of a light weight board, usually with a well finished surface which can be highly decorated with special printed designs. The tonnage of board made for folding box use was 3.8 per cent less in 1930 than in 1929, but due to the lighter weight per thousand square feet, a greater number of cartons were produced per ton than in any previous year. The seasonal activity is shown in Chart I (third section) and will be found similar in trend to that of the mill and container divisions. Here again it will be noted that the fall and closing months of the year were far below normal.

The low prices of box board have aided the folding box plants in extending the use of their cartons among prospective customers formerly deterred by the high cost. That the carton makers did not escape the keen competition in other branches of the industry is evidenced by the low prices at which many of the large contracts have been taken. Some of the smaller plants that have devoted

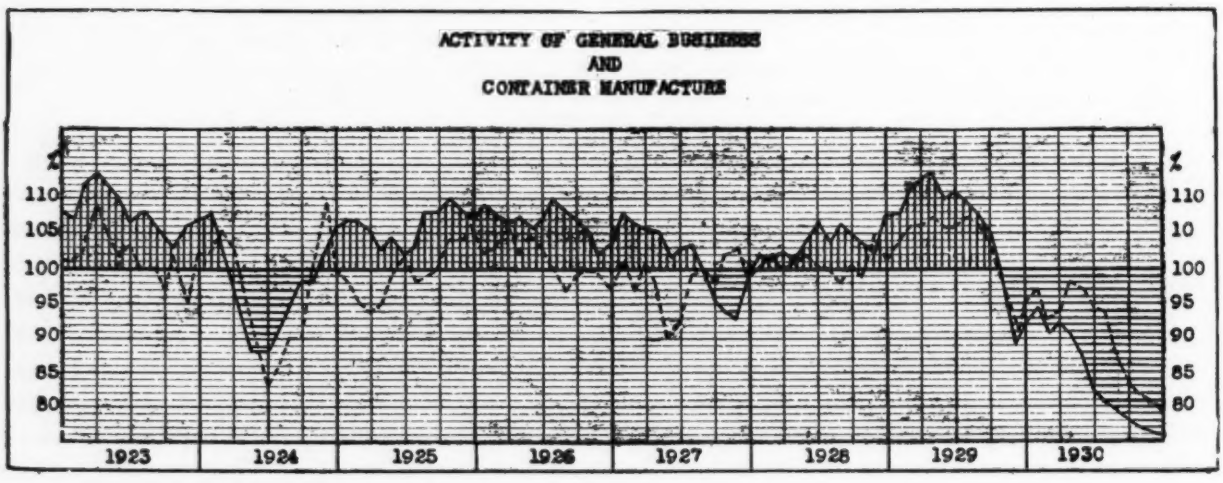


CHART 4

The Index of United States Business Activity is computed by combining various individual indices of business conditions. Each component series of business activity has been reduced to a percentage of normal. The influence of seasonal variations and growth trend has been removed. The corrugated and solid fibre box activity has been computed in a comparable manner and is represented on the chart by the broken line.

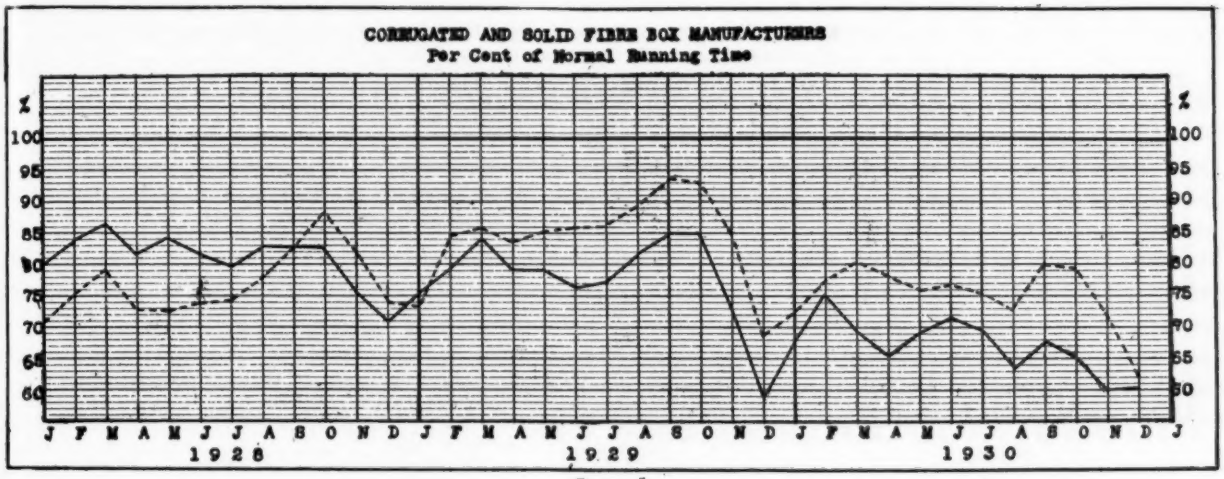


CHART 5

The normal or usual hours of operation per week are multiplied by the number of machines (corrugators or pasters) to give the actual possible machine hours. This rated figure is divided into the actual hours operated and gives the per cent of activity.

their time to developing specialties, novel packages and artistic designs have not felt the severity of the general depression.

Conclusion

The year just past has been one of readjustment. It opened with the prospect of some if not all of the usual yearly growth which had been experienced so regularly and ended with an actual loss for the major portion of the industry. The increase in plant capacity planned in advance has for the most part been brought to completion and the urge for decreased cost has been accomplished by speeding up existing equipment and procuring greater operating efficiency. The period of depression has not been without benefit. The strict analysis made of costs, the elimination of all items of unnecessary expense, the attention paid to plant organizations, the weeding out of inefficient operators, all have brought the manufacturing of paper board and its products into a much more effective condition. From the standpoint of sales the lower price levels have made possible the development of many new fields and it is a matter of record that once a user is converted to the folding box or fiber board container, it is seldom that he reverts to any other form of packaging or packing.

With the plants well equipped and reorganized to produce at low costs and with the sales outlets expanded into many new fields, any increase in general business activity should bring an immediate response in a turn for the better throughout the industry. There is just one further requisite, and that is a stabilized price policy based upon cost and a fair profit. With a greater degree of co-operation among members of the industry and a spirit of "live and let live" governing the salesman's attitude, the year 1931 will be one of gradually increasing profits.

DECEMBER BOX BOARD PRODUCTION

Monthly statistics, covering the period from January 1, 1929, to December 31, 1930, inclusive, on production, shipments, etc., of box board, based on reports submitted to the Bureau of the Census by 97 establishments operating 130 plants, are presented in the following table. The capacity data shown below varies according to the normal number of working days in each month.

Year and Month	Operation: Inch hours: Capacity	Operation: Inch hours: Operated	Operation: Per cent of Capacity	Production: Short Tons: Capacity	Production: Short Tons: Output	Production: Per cent of Capacity	Unfilled Orders (end of month): New Orders	Unfilled Orders (end of month): Short Tons
1929								
Jan.	12,166,180	9,548,914	78.5	332,202	255,795	77.0	246,126	89,643
Feb.	11,230,320	8,661,380	77.1	306,648	233,103	76.0	233,577	89,936
March	12,188,644	9,641,580	79.1	333,424	263,252	79.0	271,118	98,016
April	12,188,644	9,495,901	77.9	333,424	256,486	76.9	254,216	99,610
May	12,188,644	9,641,050	79.1	333,424	266,484	79.9	252,122	88,048
June	11,719,850	9,012,771	76.9	320,600	233,164	72.7	221,429	73,330
July	12,188,644	9,227,606	75.7	333,424	242,265	72.7	245,457	76,091
Aug.	12,657,438	9,805,677	77.5	346,248	265,063	76.6	269,951	80,634
Sept.	11,251,056	8,745,015	77.7	307,776	242,032	78.6	251,189	85,866
Oct.	12,657,438	9,707,460	76.7	346,248	269,611	77.9	269,300	84,237
Nov.	11,681,450	8,689,622	74.4	320,175	241,780	75.5	219,635	66,125
Dec.	11,681,450	6,843,974	58.6	320,175	182,699	57.1	175,090	58,612
Total year	143,799,758	109,020,950	75.8	3,933,768	2,951,734	75.0	2,909,210	.....
1930								
Jan.	11,691,264	8,772,273	75.0	329,628	236,344	71.7	243,612	69,940
Feb.	10,888,704	8,971,760	82.4	306,432	220,014	71.8	213,181	62,134
March	11,796,096	8,643,344	73.3	331,968	229,979	69.3	225,782	58,591
April	11,796,096	8,580,845	72.7	331,968	245,167	73.9	249,735	66,868
May	11,796,096	8,377,741	71.0	331,968	239,186	72.1	234,448	63,237
June	11,342,400	7,841,532	69.1	319,200	221,525	69.4	220,965	58,866
July	11,796,096	7,892,964	66.9	331,968	222,788	67.1	230,380	65,819
Aug.	11,796,096	8,029,756	68.1	331,968	224,391	67.6	221,840	63,518
Sept.	11,342,400	7,907,075	69.7	319,200	228,257	71.5	226,899	61,978
Oct.	12,249,792	8,391,432	68.5	344,736	253,889	73.6	247,209	57,377
Nov.	10,888,704	*7,113,895	65.3	306,432	*202,700	66.1	*200,199	*55,534
Dec.	11,796,096	6,249,075	53.0	331,968	170,974	51.5	167,808	53,572
Total year	139,179,840	96,771,692	69.5	3,917,436	2,695,214	68.8	2,682,058	.....

* Revised.

Year and Month	Shipments of boxboard (Short Tons)	Stocks of boxboard, end of month (Short Tons)	Consumption of waste paper: Capacity (Short Tons)	Consumption of waste paper: Consumed (Short Tons)	Per cent of Capacity	Stocks of waste paper end of month: At plants (Short Tons)	Stocks of waste paper end of month: In transit and unshipped purchases (Short Tons)
1929							
January	251,812	61,721	317,980	243,404	76.5	141,389	49,115
February	233,284	61,540	293,520	222,019	75.6	130,890	54,132
March	263,038	61,754	319,046	246,660	77.3	142,026	51,531
April	252,622	65,618	319,046	236,150	74.0	147,527	67,736
May	263,684	68,418	319,046	249,880	78.3	150,250	53,157
June	236,147	65,435	306,775	232,060	75.6	156,352	55,543
July	242,696	65,004	319,046	214,574	67.3	170,745	62,967
August	265,408	64,659	331,317	256,339	77.4	171,218	59,480
September	245,957	60,734	294,504	231,029	78.4	175,279	87,700
October	270,929	59,416	331,317	254,163	76.7	186,806	70,020
November	237,747	63,449	306,725	230,046	75.0	193,534	51,650
December	182,603	63,545	306,725	172,336	56.2	197,841	49,012
Total year	2,945,927	.....	3,765,047	2,788,660	74.1	.....	.....
1930							
January	232,284	67,605	318,786	223,288	70.0	180,055	54,142
February	220,987	66,632	296,429	216,717	73.1	179,497	54,577
March	229,325	67,286	321,126	229,909	71.6	192,957	54,629
April	241,458	70,995	321,126	230,993	71.9	181,125	51,950
May	238,079	72,102	321,126	232,581	72.4	185,972	34,319
June	225,336	68,291	308,775	210,793	68.3	184,451	38,241
July	223,427	67,652	321,126	207,596	64.6	175,645	43,393
August	224,141	67,902	321,126	215,879	67.2	187,508	36,108
September	228,439	67,720	308,775	223,071	72.2	165,499	45,960
October	251,810	69,799	333,477	228,588	68.5	177,486	34,910
November	*202,042	*70,457	296,429	*190,502	64.3	*184,598	*30,649
December	169,770	71,661	321,126	162,608	50.6	201,097	34,092
Total year	2,687,098	.....	3,789,427	2,572,525	67.9	.....	.....

* Revised.

Pulp Industry Experiences Depressing Year

Throughout Entire Twelve Months of 1930 There Was Little Indication of Real Activity in Chemical Pulp Market—Question of Price, in Many Quarters, Was Considered of Minor Importance Where Substantial Tonnage Was Involved—Absence of Noteworthy Labor Troubles in Mills Was Pleasing Feature—Ground Wood Pulp Market Was Steady to Firm—Pacific Coast Bleached Sulphite Was Popular.

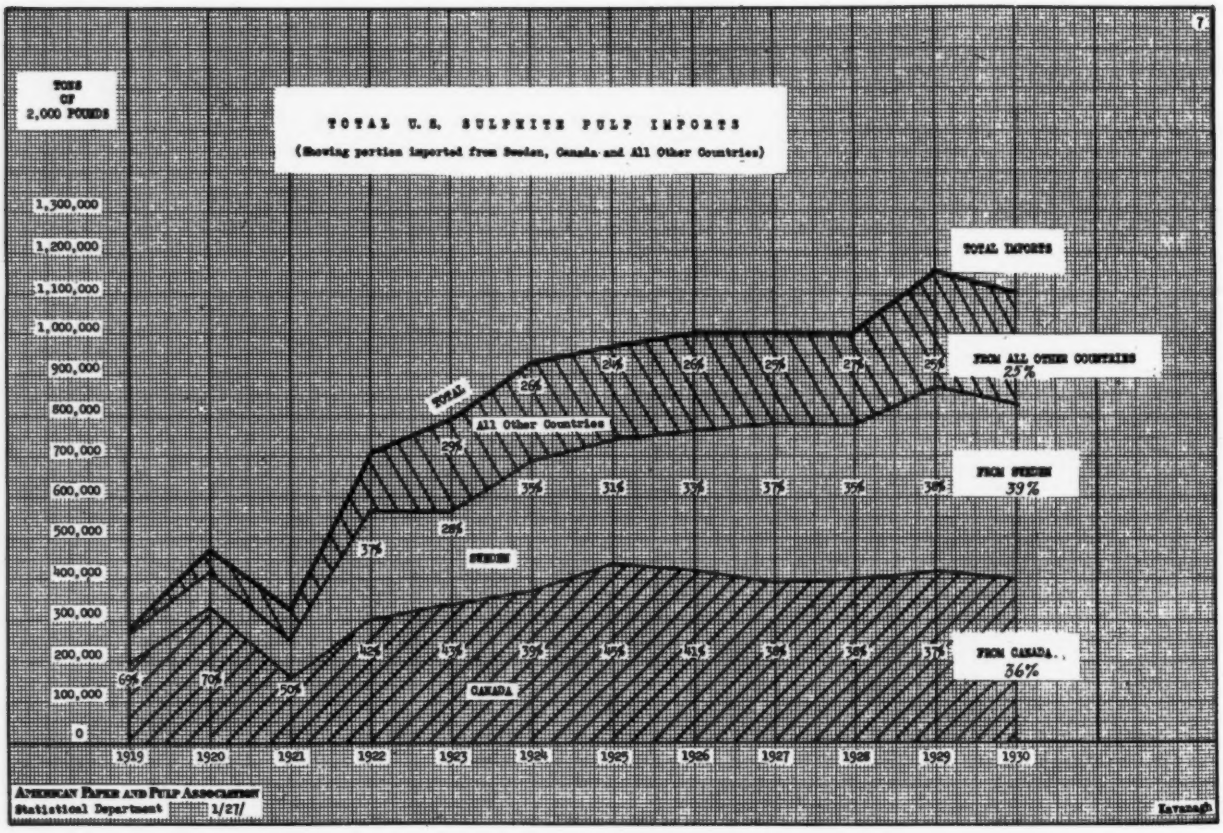
By O. F. Swanson, Sales Manager, J. Andersen & Co., and the Pulp & Paper Trading Co.

WHEN the curtain was silently lowered on the drama, "Pulp Business of 1930," there was no applause or demand for an encore. On the contrary, the audience rose wearily, gave signs of great relief that it was all over, and expressions of hope that nothing like this would ever be seen again was heard from all directions. It was a dramatic moment entirely void of any approval whatsoever, and were it not for the fact that "while there is life there is hope," many would have taken the pledge right there and then, never to attend anything like it again.

Various individuals and organizations, perhaps more farseeing and resourceful, who had seen the handwriting on the wall for several years past and gradually changed their methods of business in conformity with the trend of the trade, were in a better position at the close of the year than those who persisted in hoping for improvement which, by the way, did not materialize, and as a consequence did not reduce their prices in time to secure the same proportion of business they did in previous years. Such concerns paid the penalty by having a comparatively large surplus of pulp in warehouses at shipping points in the vicinity of the mills and in some cases, at distant points.

First Six Months' Business Fair

Early in the year there were indications of fair business and the first half of 1930 was considerably better than the last half, but at no time throughout the entire year were there any indications of real activity in the market. Both buyers and sellers felt inclined to restrict their activities and to practice the strictest economy. This grew more visible as the year advanced and while caution and business-like economy are highly commendable, it can nevertheless be carried to a point where it will retard business in general, and create a feeling of insecurity. When this happens, hand-to-mouth buying begins, causing ruinous competition which, instead of stabilizing conditions, has a very detrimental effect on both the pulp and paper business. This method of trading is mostly due to lack of confidence in the future, and as it played a very important part in the pulp business last year, it is responsible to a great extent for results accomplished during the year.



As a rule, both buyers and sellers are optimistic at the beginning of a new year and 1930 did not differ in this respect to other years. But when there were no indications of the anticipated improvement by March, even the most optimistic were then on the verge of letting down the bars in order to secure business at below so-called market prices. Many of the old reliable manufacturing and distributing concerns throughout the world, several of which have survived financial upheavals and business debacles of many years past, considered this method of business inconceivable and for some time refused to recognize the apparent necessity of resorting to the same in their efforts to at least retain their usual share of the business.

Prices Declined In Last Six Months

Later in the year there was, however, no distinction in this respect and the only effective slogan seemed to be "Get the Business Before Someone Beats You to It." The question of price was evidently of minor importance in the seller's opinion when a substantial tonnage was involved. Consequently, prices naturally sank, and in many instances until they reached the level where they not even cover the actual cost of the product. But in spite of this, the surplus of all grades of chemical pulp increased until, with few exceptions, pulp manufacturers the world over found it necessary to curtail production. Although this was done there was not a single reliable sign of a firmer market at the end of the year, but from available information, the lowest point in the continued downward trend was reached about December 1.

If the year 1930 brought adversity, it also brought fresh proof of the mill workers' desire to do their bit when their co-operation was really needed and the decrease in conflicts between employers and employees was both impressive and helpful. This particular condition should indicate that a year of depression can also accomplish something worth while, and among other records achieved, favorable and unfavorable, there was practically no noteworthy labor trouble in the mills last year. This is something unusual, as severe strikes in years past have at times almost crippled the industry temporarily.

Owing to the scarcity of water in certain parts of the world where mechanical wood pulp is produced and undoubtedly also due to the curtailment of production by agreements between the manufacturers in Sweden, Norway, and Finland, fluctuations in prices of mechanical wood pulp were very slight compared with the fluctuation on chemical pulp, on which prices in some grades were reduced by approximately 35 per cent during the year, and in the case of kraft pulp, sales were reported at lower prices than ever before. Bleached sulphite had the widest range of prices. Some of the lesser known brands were reported sold at half the price obtained for the best brands, which is another record for 1930. Never before in the history of the pulp business have some grades of bleached sulphite been sold at about $100.00 per ton f. o. b. cars consumers mills and other grades at approximately $50.00. Strong unbleached, easy bleaching and other grades of unbleached sulphite were also affected, but not as severely as kraft pulp, of which important sales were reported consumnated at as low a price as $28.00 per short ton on dock usual Atlantic Ports.

Quality of Domestic Pulp Improved

The great improvement in the quality of domestic chemical pulp, particularly bleached sulphite manufactured on the Pacific Coast, is in my opinion the most outstanding accomplishment in the pulp industry in recent years. It is now quite generally conceded that this pulp is not only equal in quality to several brands of Eastern and imported pulp, but more suitable for certain purposes. Being manufactured on a scientific basis, the mills operating under expert supervision, and the product submitted to rigid technical control, there really is nothing startling about this achievement. It has, however, proved conclusively that wherever there is a sufficient supply of suitable wood at low enough prices to warrant the erection of pulp mills, they will be built, in spite of the fact that the market cannot absorb the production of the mills in operation.

The rather substantial overproduction of chemical pulp never did stop the construction of new mills, nor the enlargement of old, and the increased necessity to supply the so-called converting paper mills with pulp at the lowest cost possible must be an important reason for the construction of new mills and the modernizing of old plants, particularly those in localities where raw materials can be procured at attractive prices. Mills less favorably situated will find it more and more difficult to compete and if business does not improve considerably it will eventually develop into a proposition of the survival of the fittest.

Enormous improvements in production methods have been made by numerous small mills reluctant to close down, hoping for better times, and if the management and the crew of such mills are alert and efficient, they should be able to continue to operate. The size of such mills is of minor importance.

The actual manufacturing cost of a product has always been and always will be an important factor, but the password to success last year was "quality" and not "quantity." Concerns unable to realize this fact in time, found the more alert operators supplying their old customers with comparatively new and improved products, and usually at reduced prices. In order to protect its own interest, the pulp industry must necessarily protect the buyers of its commodities by supplying them with goods of uniform and entirely satisfactory quality.

More Attention Paid to Laboratory Tests

Last year, more attention was paid to laboratory tests of pulp than ever before, and in some instances color, freeness, cleanness, and strength were specified on the contracts. This was something new, and it is apt to become a part of many contracts within the near future. Whether or not it can be worked out successfully remains to be seen. But if it is possible to manufacture and sell pulp according to specifications, not only a great step is then taken on the road of progress, but the uncertainty as to the proper manipulation of the fiber in the paper mill is thereby practically eliminated. It might mean the keynote of simplicity in paper making, which at present is so complicated that even the most skillful paper makers are frequently confronted with new and expensive problems to solve, many of which are caused by a seemingly first class pulp, but which in reality is neither of uniform quality or entirely satisfactory to the paper manufacturers.

There is no question but what the pulp industry has been ailing since September 1929, and when all facts are known, 1930 will be considered a very unsatisfactory year to both sellers and buyers. To the former, because of the decreased demand and low prices, and to the latter for practically the same reason. The utter lack of any signs of stability of a declining market is, if anything, more injurious to the buyer than to the seller, because there is always the possibility of the consumer being overstocked with comparatively high priced goods.

This was a common occurrence last year but, after all, it would be unfair to call 1930 a reprobate, although something close to it would perhaps be an appropriate name, and all those who sigh for the good old days should be reminded that we now have mass production and mergers to adjust ourselves to. The time required for this adjustment depends to a great extent on the sales policy of the large units, and as it has been said that the machine is the instrument of our emancipation, watchful waiting is again in order. There is no better healer than "Father Time." Of course statements have been made by those who consider the machine a destroyer of idealism and the merger the destroyer of individualism and that nothing will ever be right again until these two monsters are fettered. I wonder what America's first paper maker, Mr. Rittenhouse, would say about this. When he made paper at the rate of about two square feet every five minutes, production was coming through at top speed. Now a modern Fourdrinier is producing about 100,000 square feet in the same length of time and because of its great production

and influence in promoting the pulp business, the machine should stand for progress and the merger for efficiency.

Tendency Toward Mergers

If taken into consideration that less than sixty years ago wood pulp was in its infancy and that it now occupies the most important position in the paper industry, the answer is the same—"Progress." In the pulp business today there are not as many companies as there were a few years ago, and I presume there is a reason, but as someone is supposed to have said "Experience is a great teacher and depression a great tester" why fret, "watch and wait." If the consolidations of small concerns into one or more mergers is sound and beneficial to all concerned, including the public, its success is assured. If not, no imaginative ability is required to picture the ultimate results of such consolidations. It would mean dissolution. The tendency toward consolidation and merging of pulp mills with supposedly resultant economies was not confined to this industry. The paper manufacturers also availed themselves of this means to eliminate waste and increase efficiency. Two avenues of escape were open to the small and inefficient mills—either to consolidate or increase efficiency, and in many cases consolidation was resorted to. Nobody can be sure as to what is going to happen during 1931 but the indications point toward further merging.

During 1929 the main subjects of discussion were stocks, bonds and prohibition. But since 1930 inherited a baby by the name of "Depression," it found itself too occupied to talk about anything else. The subjects of 1929 were by far the most pleasant, but as there was something very fascinating about the growing "Depression" 1930, the subjects discussed during 1929 were no longer of particular interest.

Last year pulpwood was imported from Russia. The quality was reported to be very satisfactory indeed and so were the prices, until domestic and Canadian dealers in pulpwood were compelled to meet this foreign competition when the purchases of Soviet pulpwood were no longer considered particularly attractive. The time will come when Soviet wood pulp will be used by paper manufacturers both in Europe and the United States.

Confidence in Future Needed

The best cure for the present business depression is confidence in the future, and if this remedy is extensively used, satisfactory progress will result.

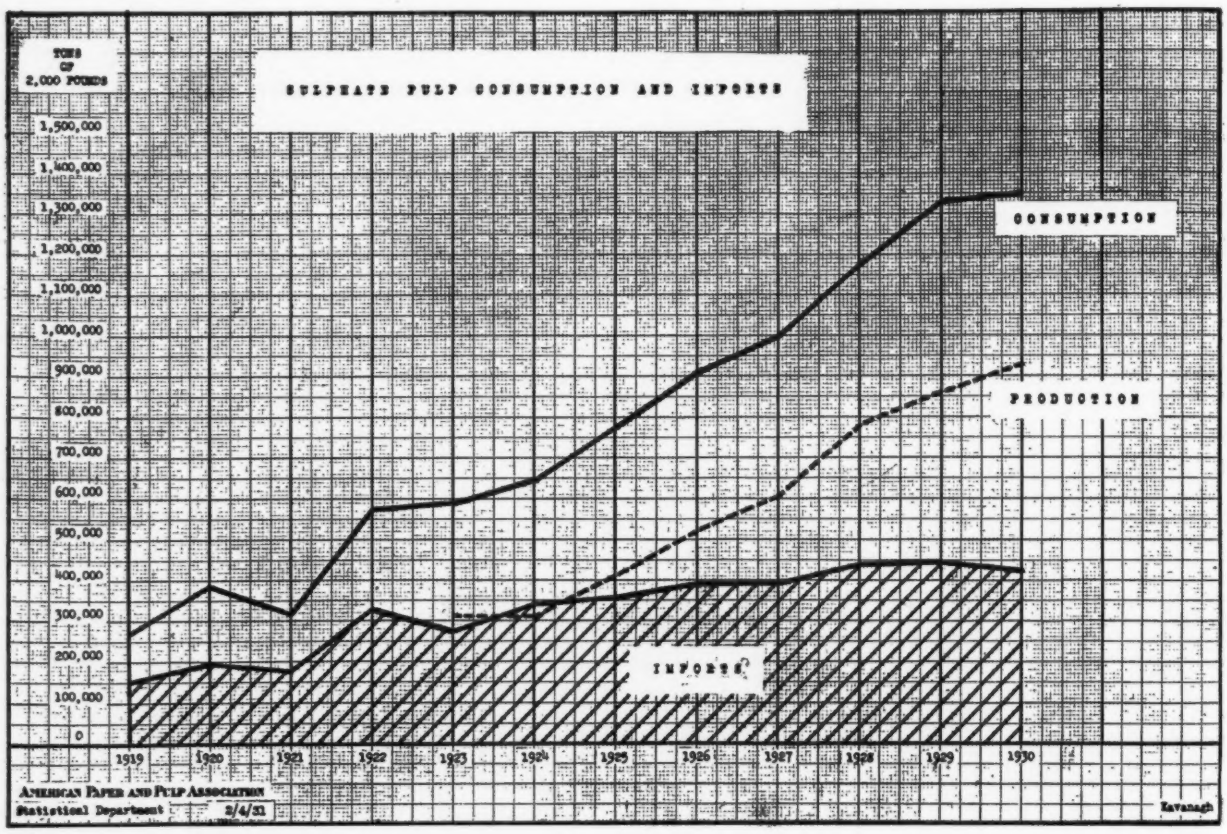
KNOWLTON BROS. RESUME FULL TIME

Full time operations have been resumed by Knowlton Brothers, Inc., Watertown, N. Y., after running on curtailed schedules for some time past. The company reports an improvement in business and claims that an increased volume of orders resulted in the return to normal schedules. Operations have been hindered for some time because of the low water conditions in this section but with the aid of electrical energy acquired from neighboring sources the firm has been enabled to keep running. The firm claims that business prospects for the future are commencing to look brighter.

Herbert E. Harmon, secretary of the company, has just celebrated his 45th anniversary from a point of service and he was the recipient of congratulations from his many friends. Mr. Harmon, who is 76 years old, served as general superintendent for many years before being promoted to the secretarial position. He is also one of the principal stockholders and directors.

ROBERT GAIR CO. INSTALLS BOILERS

A new 700 hp. high pressure boiler is being installed at its Tonawanda Division, Tonawanda, N. Y., by the Robert Gair Company. The new installation will involve the expenditure of $75,000 and is the first step in a boiler program planned to completely modernize the power plant of the Tonawanda Division.



Paper Stock Demand Light During 1930

With Exception of Hard White and Soft White Shavings, Which Were in Excellent Request Throughout Year, Practically All Grades of Waste Paper Were Off—Gluttered Warehouses Forced Packers to Sell at Low Prices, With the Result That the Market Was Unstable—Paper Mill Demand For New and Old Rags Was Only Moderate and Prices Declined Sharply—Situation Demands Serious Attention.

By Walter R. Hicks, of Daniel Hicks, Inc.

BUSINESS is business. But when there isn't any business, what is it? The business structure has been reduced to ashes—and I have been asked to sift the ashes. A "Cindrella without any Fairy Godmother." But there is always a "Slipper" and the quest for the right foot. Paper stock, it would seem, has always been on the wrong foot.

Contrary to economic prediction, and propaganda that promised an early revival of business, the Law of Gravitation asserted itself in propounding the theory that "Whatever goes up must come down." 1929 served to answer that all important question "How high is up?" and 1930 demonstrated the other extreme, "How low is down."

Paper Stock in Doldrums

Water, steam and electricity possess the same potential power that marked the progress of man. Has exploitation deprived these forces of the power to function in the scheme of things? Has not extravagance resulted in expansion to the extent of distortion and ultimate collapse, and that this collapse has resulted in pandemonium?

Instead of becoming panicky, do not the dictates of our better self demand that we review the situation and determine in what degree we have contributed to this state of affairs, and if our only profit for the past year is experience, and if that experience will govern the future conduct of business to prevent the mistakes of the past, will it not yield something out of the melee?

Paper stock; one of the rankest transgressors, unorganized, untutored and unheralded, found itself in the doldrums, where it will remain until wisdom is visited upon the trade, as intelligent operation is the only medium of restoring order out of chaos.

Waste Paper Burned in New York and Boston

A situation has developed in 1930 that demands the serious attention of the trade. In the early part of the year Boston staged a "Tea Party," but instead of "Tea" the demonstration was made with "Waste Paper" and instead of dumping it overboard they burned it. This was characteristic of Boston with its historic background, and the demonstration was the result of a condition where the packers figured they were better off burning the waste paper than attempting to sort and pack at the prevailing prices.

More recently the packers of New York obtained permits for the burning of waste paper at the city incinerators for practically the same reasons. There was considerable waste paper offered to the packers free that in former years brought from fifteen to fifty cents a hundred pounds, but getting the paper for nothing did not permit of them handling it at a profit because of market conditions.

Need of Intelligent Operation

Waste paper is merely what the name implies if there is no demand for it as raw material for paper making. Lack of demand over 1930 presented a problem to the collectors of waste paper and on the solution of this problem largely depends the future of waste paper. An immediate demand arose for an organized effort to treat with the conditions and an association was formed in the West during the summer months with a Director General in the hope of working out of the difficulty in conjunction with the Department of Commerce under the rules and regulations that govern trade conferences.

The National Association of Waste Material Dealers also realizing the seriousness of the situation and called several meetings in the hope of arriving at relief measures. Both these associations presented constructive ideas and should succeed in bettering conditions in the trade in general. If they have accomplished nothing else to date they have at least awakened a realization that the slipshod methods employed in the trade are not only obsolete but disasterous, and demonstrated the need of intelligent operation.

Price Situation Unsatisfactory

The Waste Paper packers went through the motions of business, putting in all their brawn and muscle—but to the utter exclusion of brain. The volume was fair, but hard work was the only recompense. Gluttered warehouses and empty tills forced the packers to sell at any old price, and there was consequently no stability to the market. The low grades in price, in keeping with their classification, remained low.

Mixed Papers Hit Zero

The temperature of mixed papers hit zero last winter and hovered around there all year. Thirty to thirty-five cents a hundred pounds, a price that in other years would represent the low of the year, was the highest that the mills paid for the year. The market was such that it practically eliminated the packing of containers and print manillas. Ledger stock sold for a price below that of good book stock, where there is ordinarily a differential of five dollars a ton, and books sunk to levels that had not been reached since 1921. Hard white and soft white enjoyed a good demand all year, and the fluctuation in these two grades was slight compared to the rest of the market and in spite of a sharp reduction in pulp values.

Demand for Rags Moderate

New and old rags suffered proportionately with other grades of paper stock. The paper mill demand was moderate and the shredding and shoddy markets were very dull. The price of staple cotton was a serious factor in the shoddy market and its effect was felt on new cuttings. Roofing and fiber mills were dull, and lack of their purchasing power was felt. The demand from the fine mills was not sufficient to hold up the price of new cuttings and high grade old rags, and they suffered serious declines over the year. White shirts selling at around eleven cents the beginning of the year, dropped to about eight cents at the close.

Blue overalls went from about seven and one-half cents to six cents, with unbleached muslins seeming to be in about the best position of any new rags with a range of about one cent between the high and the low.

General Depression Affected Chemical Market

Falling Off in Consumption Resulted in Drastic Price Declines on Many Chemical Commodities Used in Paper Industry—Inventories at End of Year Considered Below Normal, Due to Hand-to-Mouth Purchasing Policy Pursued by Many Consumers—Manufacturers Have Succeeded in Bringing About More Stabilized Quotations in Last Few Weeks and Outlook for Future Is Brighter—No Lower Prices Likely.

By Guy A. Gardner, Manager, Chemical Division, M. Gottesman & Co., Inc., New York.

THE chemical market, during the past year, naturally reflected the general trend of business, and the beginning of this year current prices of the leading chemicals of interest to the pulp and paper maker indicate the considerable reductions put into effect from time to time during 1930.

Wholly in Buyers' Hands

The falling off in consumption by practically all large chemical using industries put the market wholly in the buyers' hands and keen competition for business resulted in frequent and in some cases, drastic declines to lower and still lower price levels, some commodities going much below the lowest figures quoted during the market break of 1920-1921.

Little Excuse for Indiscriminate Competition

While everyone feels that lower chemical prices are in line with the drop in other basic commodities, still there is very little excuse for the indiscriminate price competition which has been going on for the last six months. Chemical manufacturers, however, are waking up to the fact that while sales volume is important and necessary, it can be overdone if it has to be secured at prices which not only show no profit but actually show a substantial loss. This point of view is beginning to prevail and it is hoped that for the balance of 1931 a steadier market tone will be in evidence.

Evidence of Steadier Prices

This has been shown already in the price trend of several leading items in the last few weeks, especially in such important paper makers' chemicals as soda ash, caustic soda, sulphate of alumina and chlorine. The manufacturers have been successful in bringing about a more stabilized market, although several of the leading factors found it necessary to withdraw all quotations for a time in order to put an end to the unsettled conditions.

Inventories Below Normal

While conditions have been diffcult, there is little doubt that due to the hand-to-mouth buying policy pursued by many consumers during 1930, chemical inventories may now be safely considered as below normal and therefore the chances are that there will be few further major price declines during 1931. On the other hand, there is every reason to think that prices will improve somewhat as the year goes on. While there is very little likelihood of a boom, the outlook is considerably brighter and we can confidently look for enough improvement during the coming year to place business on a reasonably profitable basis. The pulp and paper maker has every reason to believe, in so far as his chemical purchases are concerned, that he is buying today at prices that permit him to place his orders with little fear of further weakening of the market.

Soda Ash and Caustic Soda

The alkali market, after several months of the keenest kind of selling competition, has finally settled down to a price basis considerably lower than the schedules prevailing in 1929 and 1930. Soda ash, light, in car lots in bags, is now quoted at $1.15 per 100 lbs. at the works, and caustic soda in drums, 76 per cent, in car load lots, at $2.50 per 100 lbs. at the works.

Sulphate of Alumina

Price reductions have been the order of the day and paper makers' alum contracts for 1931 delivery were made at lower levels than for many years past. There has been of late, however, a determined effort to strengthen the market, which is meeting with considerable success and prices are now firmer and somewhat higher than quotations prevailing prior to January 1, 1931.

Salt Cake

The price of salt cake, in line with other chemical products, declined considerably from last year's quotations, but the lessened demand from the consuming industries was at least in part offset by curtailment of production due to changes in the acid-making process. There does not appear to be any surplus tonnage forcing itself upon the market and prices are being well maintained for both spot and contract shipment.

Chlorine

The contract price of chlorine dropped to a low for all time about the end of last year and large contracts were booked at $1.75 per 100 lbs. in tank car lots at the works. During the past few weeks, however, the situation has improved and manufacturers are now naming $2.50 per 100 lbs. as the inside figure.

China Clay

On December 11 of last year, the Associated China Clay, Ltd. was dissolved. This association, which had been operating for many years, was formed to stabilize prices on English china clay. All price agreements on English clays were cancelled when the association was dissolved and the outlook is for decidedly lower prices on all grades, at least for the present.

Sulphur

While shipments of sulphur fell off considerably during 1930 especially for export, the price remained without change and contracts were offered on the same basis as a year ago. The importation of pyrites also declined approximately 20 per cent during 1930. Prices, however, remained without appreciable change.

Sulphuric Acid

With the price of sulphur and pyrites practically unchanged, there is little likelihood of any important change in the price of sulphuric acid, for the present at least. While demand for the acid is somewhat below normal for this time of the year, the outlook for increased activity in the steel mills and other large consuming industries gives a firm tone to quotations. Sixty degree acid is offered at from $10.00 to $10.50 per ton in tank cars, while the sixty-six degree acid is quoted at from $14.50 to $15.00 per ton.

Turmoil in Canadian Paper Industry During 1930

Over-Expansion and Falling Demand Have Created Difficulties Without Parallel—Crisis in News Print Industry Impending—Super-Merger or Cut-Throat Price Competition Seem To Be the Only Alternatives—Huge Development in Newfoundland Promises Another Grave Complication—Higher Tariff For Book Papers, Boards, Wrappings and Paper Containers—Bogey of Russian Pulpwood Competition.

By C. L. Sibley, Regular Correspondent of the Paper Trade Journal.

STRESS and turmoil, with all their attendant evils, marked the year 1930 in the pulp and paper trade of Canada, and the end is not yet. Never before in the history of the industry has there been such a feeling of apprehension in regard to the future as exists at the present time, for the general belief is that a crisis impends, and that the current year will witness developments that will effect revolutionary changes in the set-up and capitalization of most of the leading organizations at present in control of the industry.

It was peculiarly unfortunate that a general depression, with decreased consumption of pulp and paper products, should coincide with the completion of the vast-program of expansion in the news print industry that had been under way for several years. But so it was. The very year in which demand for news print ceased to increase and then to fall behind was the year in which expansion established a new world record in productive capacity. The result was that the ratio of operations to capacity declined to the lowest level of record, the latter months of the year witnessing 40 per cent of the productive capacity lying idle.

The news print mills of Canada finished 1930 with an installed rated capacity of 11,940 tons daily—the largest on record in any country in the world. During the year there was a gain of 832 tons daily. As against this, news print exports for the twelve months ending December last amounted to 2,331,011 tons, as compared with 2,510,633 tons in 1929, a decline of 179,622 tons, the value for the year being $133,280,932, as compared with $148,656,611, a decline of $15,375,679.

Were it not for the new mills and new machines which have come into operation in the past two years, increasing productive capacity by no less than 2,540 tons per day, operations in 1930 would have been considered satisfactory under all the circumstances, for production showed an actual increase of 118,529 tons as compared with that for 1928. The trend of news print production in Canada in the last ten years is shown in the following table:

Year	Tons	Year	Tons
1930	2,499,631	1924	1,352,994
1929	2,728,872	1923	1,266,232
1928	2,381,102	1922	1,081,916
1927	2,086,949	1921	808,066
1926	1,881,737	1920	875,170
1925	1,522,217		

All Branches Affected

What happened in regard to the news print industry occurred in more or less degree in all branches of pulp and paper production. For the year 1930 the exports of all pulp and paper were valued at $177,500,222. For 1929 the total value of these exports amounted to $198,287,106, so that last year showed a decline of $20,786,884, or 10 per cent from the previous year. The details of these exports, as compared with those of 1929 is as follows:

	Year 1930		Year 1929	
PULP:	Tons	$	Tons	$
Mechanical	208,759	5,967,172	209,331	5,906,638
Sulphite bleached	249,099	17,954,714	253,810	19,246,692
Sulphite unbleached	187,423	9,201,250	251,739	9,923,016
Sulphate	86,092	5,151,652	134,321	7,856,486
All other	28,799	785,191	36,408	644,189
	760,172	39,059,979	885,609	43,577,021
PAPER:				
News print	2,331,011	133,280,932	2,510,633	148,656,611
Wrapping	13,181	1,381,462	14,903	1,628,261
Book (cwts.)	39,740	365,801	74,052	632,660
Writing (cwts.)	2,382	20,148	4,170	38,968
All other	.....	3,391,900	.....	3,753,585
	.....	138,440,243	.....	154,710,085

Consolidations in News Print Industry

The main interest in the industry has, of course, centered around the news print field, which far overshadows all other activities in regard to forest products. Faced with declining demand and mounting capacity, leaders in the industry have recognized the need for consolidations, so that production might be more effectively curtailed, costs of production lowered, and ruinous price competition avoided. Considerable progress has been made in this direction. During the twelve months Canada Power and Paper Corporation absorbed the Port Alfred Pulp and Paper Corporation, Wayagamack Pulp and Paper Company, and Anglo-Canadian Pulp and Paper Corporation. The organizations already operated by the Company were Belgo-Canadian Paper Company, St. Lawrence Paper Company and Laurentide Company. It also exercises with the Abitibi Power and Paper Company joint control of the Thunder Bay Pulp and Paper Company.

And now consolidation effected during the year brought together the St. Lawrence Paper Mills, the Brompton Pulp and Paper Company and the Lake St. John Power and Paper Company. Control was vested in a new holding company, the St. Lawrence Corporation, Ltd.

Other large consolidations in Canada are: Abitibi Power and Paper Company and its subsidiaries, Spanish River Pulp and Paper Mills, Fort William Power Company, St. Anne Paper Company, Manitoba Paper Company and Murray Bay Company; Price Bros. & Co. controlling Donnacona Pulp and Paper Company; International Paper Company, with its subsidiaries, Canadian International Paper Company and New Brunswick International Paper Company, and owning an interest in the E. B. Eddy Company; and the Backus-Brooks group, comprising the Great Lakes, Fort Francis, and Kenora Paper companies.

Talk of a Super-Merger

It has long been regarded as likely that the Canada Power and Paper Corporation and the Abitibi Power and Paper Company would merge, and indeed it is generally accepted that negotiations to that end have been proceeding for months. There is talk also of the International Paper Company's mills in Canada being brought into the merger, as well as the Backus-

Brooks groups, and the St. Lawrence Corporation. So far, however, nothing has come of the negotiations, the difficulties of capital adjustment having to date proved insuperable. Hope has not yet been abandoned, and no surprise would be occasioned any day at an announcement that an arrangement combining any or all of these organizations had been effected.

A Flare-up in the Industry

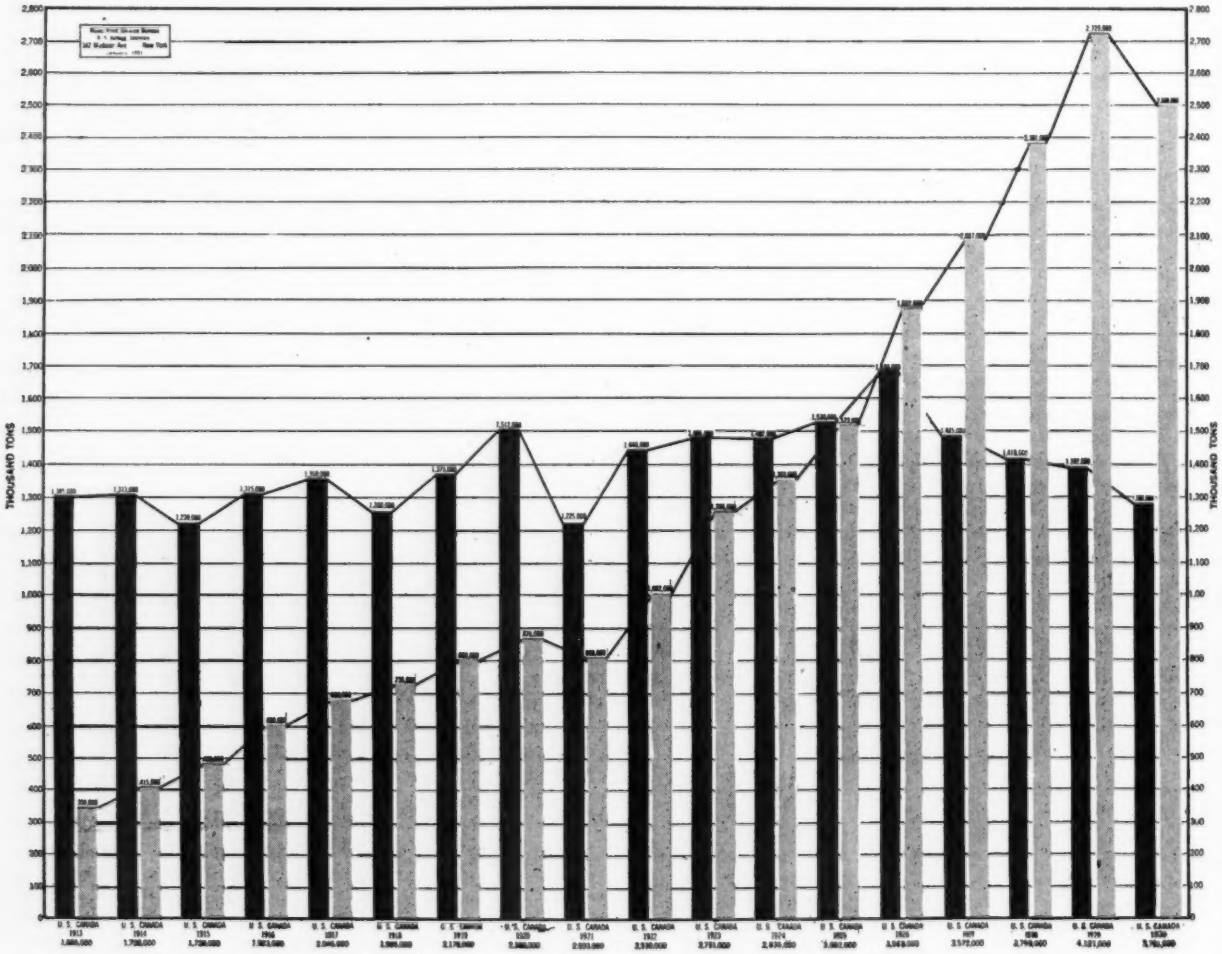
Quite a flare-up in the industry was caused around the end of September by the peremptory resignation of Col. John H. Price, president of Price Bros. & Co., from the chairmanship of the Newsprint Institute of Canada, the organization which had been controlling output and allotting tonnage for most of the big eastern companies, with some notable exceptions, including the International Paper Company. For a long time past it had been an open secret that the companies represented in the Newsprint Institute had been actively canvassing each others' customers, and with the resignation of Colonel Price, what was an open secret became an accepted fact. What had precipitated Colonel Price's action, it is generally believed, was the news that Canada Power and Paper Corporation, the largest individual organization represented in the Institute, had secured a contract from the Hearst interests calling, it is said, for 450,000 tons of news print per year.

According to later news from Newfoundland, it appeared that this was only part of a gigantic deal. In return for the contract, it is said, Canada Power and Paper gave the Hearst interests stock in the corporation, receiving in return a substantial interest in the Dominion Newsprint Company, the subsidiary negotiating with the Newfoundland Government on behalf of the Hearst organization for power rights and timber limits for the establishment of a large news print mill in Newfoundland.

It has been officially announced by the Newfoundland Government that negotiations are proceeding for the establishment of a news print mill with a daily output of 1000 tons, and that large supplementary pulpwood tracts in Labrador will be used as a source of supply. In the valley of the Gander River, on which the mill is to be situated, it is claimed there is one of the most extensive remaining stands of pulpwood in the world.

On the mainland of Labrador, the Newfoundland Government claims that, at the very least, there are some 30,000 square miles of pulpwood. The quality is represented to be of the best. It is very largely spruce, and generally of the black spruce variety that has proven its admirable quality for paper making. Of the balance, perhaps about one-tenth is represented by fir and spruce.

Now as Newfoundland is becoming a formidable competitor of Canada in the American market, and as its mills have been running steadily at 106 of rated capacity as compared with about 60 per cent for the mills in Canada, it will be seen that



NEWS PRINT PRODUCTION, 1913-1930, UNITED STATES AND CANADA

Canada Power and Paper Company's alliance with the Hearst interests in Newfoundland's news print development has added another puzzling complication to the many complications attending the proposed super-merger of Canadian news print organizations.

The Question of Price

There are many who think that an open price-war in the news print industry is inevitable, and there are even some who hold that it would ultimately prove advantageous to the industry as a whole, as it would force the weaker organizations out of business, close down the higher-cost mills, and concentrate production in the low-cost mills. So far this has been avoided, but the fear of such an outcome has been a spur to the persistent efforts towards consolidation, despite the formidable difficulties encountered.

Both the Canada Power and Paper Company and the International Paper Company have announced that there will be no change in the prevailing price of news print as applied to 1931 contracts. Some of the other companies have admitted quoting competitive prices and conditions to customers, and there seems little doubt that anything but a uniform price is prevalent.

As some of the mills in Canada are still running at 100 per cent of capacity, it is obvious that others are running below the average of 60 per cent, and this despite the fact that a number of high-cost mills have already been closed down. Thus all the makings of a cut-throat price-war exist, and should the merger negotiations be definitely abandoned, this price-war would undoubetdly break out.

Such are the conditions which indicate an impending crisis which will have far-reaching results.

Tariff Changes During Year

During the year the Liberal Government was replaced by a Conservative Government, pledged to a "Canada First" policy in the matter of the tariff. At a special session of Parliament called soon after the general election an extensive upward revision of the tariff was put into effect, the changes including a stiffening of the rates on all kinds of pulp and paper products. One of the most important of these was the elimination of the rebate of 80 per cent of the duty on paper imported by publishers of farm journals and magazines.

The duty on wrapping papers was also increased, as was that on paper sacks and bags and containers, on artificial silk and on advertising matter, pamphlets and advertising periodicals, and on straw and paper boards. These changes are regarded by the industry as "a step in the right direction," and it is anticipated that at the forthcoming session of Parliament further changes favoring domestic producers will be put into effect wherever it is indicated that these may be helpful.

Russian Competition in Pulpwood

Much concern has been expressed during recent months over the competition of Russian pulpwood in the markets of the United States. It is claimed that this has been ruining farmers and small lot owners in Canada who have supplemented their income by cutting pulpwood in the winter months and shipping it to the United States.

Considerable quantities of pulpwood from Russia were brought in via the St. Lawrence waterway and shipped to American points by the Canadian National Railways, a low rail-and-water rate prevailing. As a consequence of the agitation over this, the Canadian National Railways filed with the Railway Commission notice that after December 15 the company would no longer grant preferential rates to Russian pulpwood shippers passing that commodity through Canada from eastern ports of entry to northern New York State. During the season of navigation it is stated that 150,000 cords of pulpwood were shipped to the United States via the ports of Three Rivers and Sorel.

According to officials of the Dominion Government, Russia is estimated to have about 870,000,000 acres of productive forest land, of which 367,000,000 acres is in European Russia, on which there is said to be 179 billion cubic feet of soft wood, practically the same amount as we have in Canada, but the timber is for the most part tributary to rivers which flow into the Arctic and is inaccessible without expensive railway construction.

Forest authorities are of opinion that, under the present forced exploitation system, Russia is over-cutting her accessible areas and that in a few years she will have either to curtail the cut or greatly extend her railway facilities, which will increase the cost of production.

Importance of Forest Industries to Canada

The value of the forest products of Canada now reaches approximately $500,000,000 anually, and over 200,000 people are engaged in the conversion of standing timber into usable products. The transportation of forest products is one of the main sources of revenue for the railways, and the present depression in forest industries is a more serious factor from the standpoint of railway revenue than the decrease in grain shipments. The number of cars loaded with forest products for the year 1930 was approximately 100,000, or 16.8 per cent less than during 1929, while the decrease in loadings of grain and grain products was only about 10 per cent.

About 40 per cent of the wood cut in Canada in recent years has been exported. This wood has been exported in the following form: Sawmill products, 40 per cent; paper, 18 per cent; pulp, 13 per cent; ties, poles, etc., 3 per cent; pulpwood and other raw material, 20 per cent. The annual value of exports of forest products in recent years has been around $280,000,000, of which over $200,000,000 has gone to the United States. Imports of forest products have been around $36,000,000 per annum, mainly from the United States.

One-third of the total land area of Canada is better suited for the growing of timber than for any other purpose. There are 550,000,000 acres of productive forest land tributary to the existing transportation facilities. Though the area carrying merchantable stands has been reduced to 200,000,000 acres through fire and cutting, there are 355,000,000 acres on which young growth has been established. This will not attain merchantable size for from 30 to 75 years.

About 3,160 million cubic feet of standing timber is utilized per annum, which is equivalent to about 27 million cords. The annual loss of merchantable timber by fire, despite the more efficient fire protection organization of recent years, is still about 300 million cubic feet, and it is estimated that the loss due to insects, disease, wind, etc., brings the annual depletion to over 4,000 million cubic feet. This amounts to 7.3 cubic feet per acre on the accessible productive forest area.

A comprehensive inventory of the forest resources of the Dominion is now in progress, but will not be completed for another four years. According to the last official estimate made in 1928, the total stand of timber of merchantable size was put at 224 billion cubic feet, consisting of 425 billion feet of saw material, and 1,122 million cords of smaller wood suitable for pulpwood, fuel wood, etc. Of the pulpwood species, including the timber large enough for lumber, there was estimated to be 730 million cords of spruce and balsam, 248 million cords of jack pine, 109 million cords of hemlock (chiefly in British Columbia), and 256 million cords of poplar. A little over one-half of the timber of merchantable size was considered to be commercially accessible.

Water Power Development

Closely associated with the pulp and paper industry is the development of water power; in fact, practically every large pulp and paper concern in the country is in the hydro-electric business, and some of the major installations now in progress in Canada are being carried out by power and paper companies.

Both in the construction of new plants and the extension of existing ones, water power development was maintained at a high level throughout the Dominion during 1930.

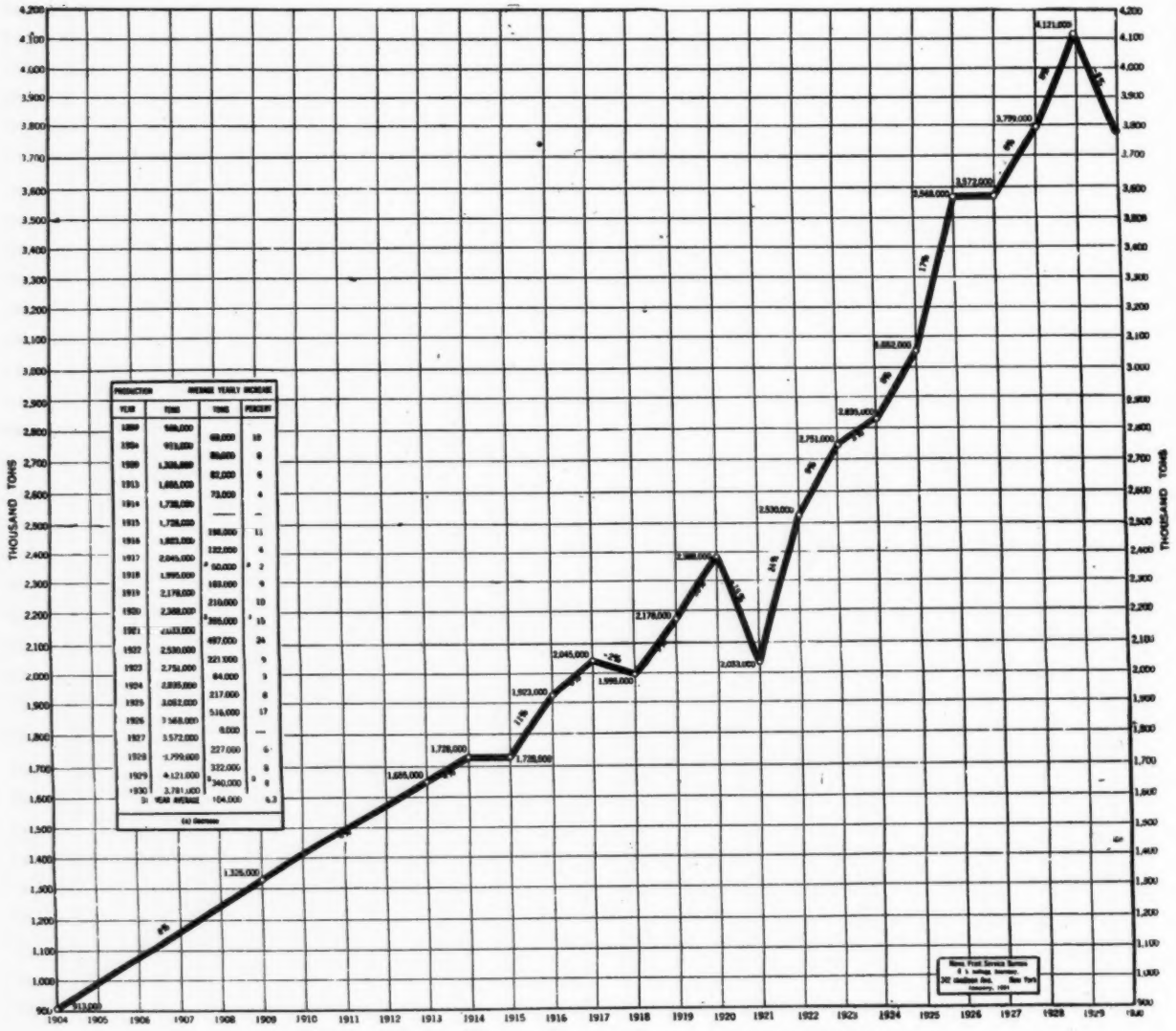
New installations brought into operation aggregated 397,850 h.p. bringing the total installation for the whole Dominion to a figure of 6,125,000 h.p. at the end of the year. Construction is active, also, on a number of undertakings throughout the country, several of which are of outstanding magnitude and with the completion of these during the next two or three years more than 1,500,000 will be added to the Dominion's total. Other important projects are under active investigation with development apparently imminent in several cases while plants recently placed in operation or actively under construction are designed for future extensions as load conditions warrant.

This large program of construction which involved a probable expenditure of $80,000,000 during the year just past and will involve as much as $300,000,000 during the next two or three years has had and will continue to have a very important influence on employment conditions throughout the Dominion. It is estimated that more than 11,000 men are at present employed on the actual construction of these various developments while several times as many are given employment in manufacturing and other establishments providing material and equipment going into the works.

During the year Ontario led in new installations placed in operation with a total of 136,000 h.p. followed by Quebec with 122,700 h.p., British Columbia 71,000, Saskatchewan 42,000, New Brunswick 21,000, and Nova Scotia 5,100.

FIR-TEX GETS BIG ORDER

Fir-Tex Insulating Board company, St. Helens, Oregon, an industry barely six months old, received early this month an order for 15,000,000 square feet of Fir-Tex from the Kelvinator corporation of Detroit, Mich., manufacturers of refrigerating equipment. One million feet of this is being shipped this month and the remainder at regular intervals.



NEWS PRINT PRODUCTION, UNITED STATES AND CANADA, 1904-1930

Big Dinners During Paper Week

Paper Manufacturers, Merchants and Salesmen and Technical Men Hold Banquets and Luncheons at New York Hotels.

Fifty-Fourth Annual Banquet of American Pulp and Paper Association, Held at the Hotel Pennsylvania, Attracts More Than 800 Members and Guests and Proves One of Most Successful Celebrations Ever Held by Organization—President S. L. Willson, Unanimously Re-Elected Head of the Association, Delivers Inspiring and Scintillating Address—Unique Woodlands Setting Surprises and Creates Great Admiration.

MORE than eight hundred members and guests of the American Paper and Pulp Association assembled at the 54th Annual Banquet in the Grand Ball Room of the Hotel Pennsylvania on Thursday evening. The event was one of the most enjoyable in the history of the association and proved a fitting wind-up to the Convention.

The staging was unique and very effective. Snow capped hills, pine trees and log cabin, with overhead a bright moon and azure sky filled with twinkling stars, made one at times imagine he was in the heart of the North Woods. The table decorations too, added to the effect, with their varied hued pine cones and miniature fir trees.

Following an excellent dinner, S. L. Willson, president of the association, analyzed the prevailing situation in the paper industry, and the future outlook, in a brilliant and comprehensive manner, which was received with marked enthusiasm by the large gathering. He also discussed the relations between the United States and Russia, saying in part:

"Another problem in which our Industry is vitally interested is our relations with Russia, particularly with reference to the importation of pulpwood; but the whole United States is vitally interested in the problems now arising or that may result from our dealings with that country under existing conditions. Their preachments and their efforts to apply, wherever tolerated—principles which are the enemy of democratic forms of government—menaces to economic systems, to agriculture, labor and industry, should not either directly or indirectly be given support. Buying their commodities under present conditions—selling them machinery—furnishing skilled artisans, supplying ideas, methods and brains from which financial resources are to be built up and later used to still further spread their pernicious and destructive gospels does not, to my mind, harmonize with either good business, or principles of self-preservation.

"I believe if all countries had the courage to withdraw financial, intellectual and moral support, their plans would soon crumble, and either through evolution or revolutions, a new and better country would arise with which international relations could safely be established, as with other countries. We have here tonight a woodlands setting, which depicts our forests from which we derive wealth—beauty—health and pleasure. Let us not forget their value to us as an Industry, and as a nation."

TECHNICAL ASSOCIATION LUNCHEON

The Fifteenth Annual Meeting of the Technical Association of the Pulp and Paper Industry took place at the Hotel Pennsylvania on Thursday, the same being held in connection with the noon luncheon. In the absence of President M. A. Krimmel, who was suddenly taken sick with an attack of influenza on Wednesday, the business meeting and luncheon was presided over by R. H. Laftman, the retiring vice-president, who opened the business session with the introduction of the guests of the association, Messrs. Robert L. Eminger, Secretary of the American Pulp and Paper Mill Superintendents' Association, James G. Ramsey, former president of the Superintendents' Association, and general superintendent of the Jessup & Moore Paper Company, Wilmington, Del. and Jesse H. Neal, General Manager of the American Paper and Pulp Association.

The first speaker introduced by Mr. Laftman was H. P. Carruth, vice-president of the Mead Pulp and Paper Company, who was one of the founders of the Technical Association, which took place in 1915, and who has continuously remained actively interested ever since. Mr. Carruth interestingly spoke of the early development in the forming of the association and the introduction of the technical individual as an integral factor in the production of pulp and paper.

The next speaker was J. C. Esselen, technologist, of Boston, Mass., who talked on the developments of research work carried on in all industries and cited in view of the many synthetic substitutes for natural raw materials which had been produced within the past few years, that it was very possible that a synthetic cellulose would be developed as a result of experiments which would be carried on within the next few years.

PAPER SALESMEN'S LUNCHEON

The annual luncheon of the Salesmen's Association of the Paper Industry held last Tuesday at the Hotel Pennsylvania, attracted a splendid attendance. William M. Chenery, editor-in-chief of *Colliers Weekly* was the principal speaker. The subject of his address was "Why the 18th Amendment Will be Repealed." He said in part:

"Beyond all question the Eighteenth Amendment in its present form will be repealed. Of this fact there is, I think, not the slightest doubt. The only uncertainty is when and how. It is perfectly apparent to anyone who, without blinding prejudice, considers the relevant facts that we are rapidly moving toward repeal. President Hoover appointed eleven eminent citizens to consider the question of prohibition enforcement. A strong majority came out clearly and unequivocally for revision and the minority, admitting dissatisfaction with what has been accomplished, merely asked that more time be allowed the experiment 'noble in purpose, to show it practicable in operation.'

"Although the publicity attending the publication of the report was a shocking distortion of the findings and conclusions of the commissioners, the report does describe in detail those conditions which inevitably will compel the repeal and revision of the Eighteenth Amendment. Prohibition and temperance are two different things. Temperance is a virtue which all approve although too few practice. Prohibition is coercion, a restraint imposed from without, a denial of liberty. The age old fight for liberty has thus gotten tangled into the question of liquor control. Morality is usually on the side of liberty. Many who believe

PICTURE TAKEN AT THE FIFTY-FOURTH ANNUAL BANQUET OF THE AMERICAN PAPER AND PULP ASS

ASSOCIATION AT THE PENNSYLVANIA HOTEL, NEW YORK, THURSDAY EVENING, FEBRUARY 19, 1931

in temperance loathe prohibition. They are sufficiently numerous and influential to make it impossible for the supporters of the rally to appeal to popular sentiment. Public opinion generally passes the other way when enforcement officers need help."

COST ASSOCIATION LUNCHEON

An interested group of members and guests attended the annual luncheon of the Cost Department of the American Paper and Pulp Association on Wednesday at the Hotel Pennsylvania.

The chairman, Jesse H. Neal, general manager of the Association, presided and prefaced his introduction of the speakers with a short comment on the applicability of the speeches at this time.

Addresses were given by Dr. E. O. Merchant, statistician of the G. H. Mead Company, of New York, and by Thomas J. Burke, Director of the Cost Department of the American Paper and Pulp Association.

The subject of Dr. Merchant's talk was "The Outlook for General Business and the Pulp and Paper Industry in 1931," and proved to be a topic of much interest to the hearers. The speech contained a resumé of last year's conditions in the paper industry, and a forecast of coming events. The speaker feels that the bottom of the depression period has been reached, and that by 1932 normalcy is likely to be attained provided sane, sound methods are employed.

Mr. Burke spoke on "Financial Management in the Pulp and Paper Industry," and suggested ways and means of management for the acquisition of wiser and therefore greater profits. He also recommended the facing of present business facts as the prime necessity in making plans for the coming year, and stressed the need for a "thorough financial housecleaning, and a determination to operate only on a sound financial basis," as the safest preventive to avoid ridiculous price cutting.

PAPER STOCK DEALERS' DINNER

The twenty-third annual dinner of the New York Association of Dealers in Paper Mill Supplies, Inc., was held Tuesday evening, February 17 at the Hotel Commodore. Two hundred and forty members and their invited guests sat down to a very finely selected menu, and enjoyed an interesting entertainment.

Tables were reserved by the following: Allied Mills Supply Company; Sol Ash, Inc.; Atterbury Brothers; D. Benedetto, Inc.; Abe Bloch & Son; C. F. Bradley; Cantasano Brothers; P. Cardinale & Son F. H. Chase; Darmstadt, Scott & Courtney; Economy Baler Company; S. J. Fisher, Inc.; Gaccione Bros. & Co.; Daniel M. Hicks, Inc.; Gus A. Johnson, Inc.; E. J. Keller & Co.; L. Leonardis; Leshner Paper Stock Company; Ernst Mayer, Inc.; Melrose Paper Stock Company; George W. Millar & Co., Inc.; A. J. Moran & Co., Inc.; National Association of Waste Paper Dealers; Philadelphia Waste Merchants Association; W. Steck & Co.; Sterling Mill Supply Company; Valva Paper Stock Company and J. B. Woodruff.

The following committee was responsible for the success of the banquet: Andy C. Costarino, president; Walter H. Martens, Charles Passannante, Alfred J. Moran, Joseph Carrano, Louis Gottlieb, Fred H. Chase and Lawrence W. Glove.

UNIVERSITY OF MAINE DINNER

During the holding of the Annual Convention of the American Paper and Pulp Association in New York last week a dinner held at the Hotel Governor Clinton Tuesday evening, February 17, of graduates of the University of Maine, who are now connected with the pulp and paper industry. This meeting proved of such interest and established the fact that there were so many graduates of the Maine University associated with the industries, that it was decided to hold such gatherings annually. The informal meeting was addressed by Dr. R. H. McKee, Professor of Chemical Engineering, of Columbia University.

Among those present were: P. S. Bolton, Paul Bray, O. W. Callighan, C. H. Champion, C. E. Crossland, M. W. Davis, J. E. Donovan, R. H. Doughty, A. H. French, E. G. Ham, C. S. Heustis, C. E. Libby, Dr. R. H. McKee, Carl Mangus, E. K. Mansfield, G. B. Martin, F. J. Morrison, A. W. Nickerson, F. W. O'Rourke, L. A. O'Rourke, Clifford Patch, H. A. Robbins, M. B. Shaw, F. A. Soderberg, D. D. Wong, R. A. Wilkins.

GLAZED AND FANCY LUNCHEON

Many subjects of vital interest to the members were discussed at the luncheon and meeting of the Glazed and Fancy Paper Manufacturers Association at the Hotel Pennsylvania last Tuesday. The following officers were elected:

President, John B. Van Horn, Holyoke Card and Paper Company.

Vice President, John McLaurin, McLaurin-Jones Company.

Secretary-Treasurer, Leonard I. Houghton.

Members of Executive Committee besides the officers: H. W. Tunstall, A. M. Collins Manufacturing Company; George R. Peabody, Louis Dejonge & Co., and A G. Post, National Coated Paper Corporation.

WAXED PAPER LUNCHEON

The American Waxed Paper Association luncheon held on Monday in the Banquet Hall of the Hotel Pennsylvania was followed by a timely speech from Ross Kenyon, vice-president of the Brookmire Economic Service, of New York City.

Mr. Kenyon spoke on the subject of present and future business conditions and their effect on the paper industry. His talk stressed the need for recognizing the present business level as a basis upon which to work in planning programs for the coming year. With this sound foundation to build on, improvement will be slow, but steady and firm, Mr. Kenyon believes.

NATIONAL PAPER TRADE LUNCHEON

A large and enthusiastic gathering attended the luncheon of the National Paper Trade Association on Wednesday at the Hotel Pennsylvania. The principal speaker was John B. Kennedy, associate editor of *Collier's Weekly*.

Mr. Kennedy spoke of his many and varied experiences as a journalist and broadcaster and told numerous stories of prominent actors, football players, pugilists and other notabilities. His witty and scintillating address was thoroughly enjoyed by all present.

PULPWOOD DEPARTMENT LUNCHEON

Following the morning session of the Pulpwood Department of the American Paper and Pulp Association at the Hotel Pennsylvania on Tuesday last a luncheon was held in the Foyer Banquet Hall. Dr. Wilson Compton, of the National Lumber Manufacturers Association, was the principal speaker and took as the subject of his discourse "The National Timber Conservation Board." His talk was constructive and illuminating.

ADVERTISING CLUB LUNCHEON

Reviews of the past business year were given at the luncheon meeting of the Paper Makers' Advertising Club which was held on Wednesday in Parlor B of the Hotel Pennsylvania. Officers for last year were unanimously re-elected for another term, with Cy Norton, of the Strathmore Paper Company, Mittineague, Mass., again heading the list as president.

NATIONAL SULPHITE LUNCHEON

An excellently attended luncheon was held on Wednesday at the Pennsylvania Hotel by the members of the National Sulphite Paper Manufacturers Association. At this luncheon there was a constructive interchange of ideas on the making of sulphite paper, and matters of interest to the group were thoroughly discussed.

GUMMED INDUSTRIES LUNCHEON

The Gummed Industries Association held a most enjoyable ulncheon at the Hotel Pennsylvania on Thursday afternoon. There was an excellent attendance and during and after the repast, numerous matters of interest to the members were freely discussed.

MANUFACTURERS OF PAPER MEET

American Paper and Pulp Association Holds Fifty-fourth Annual Convention at the Pennsylvania Hotel, New York City

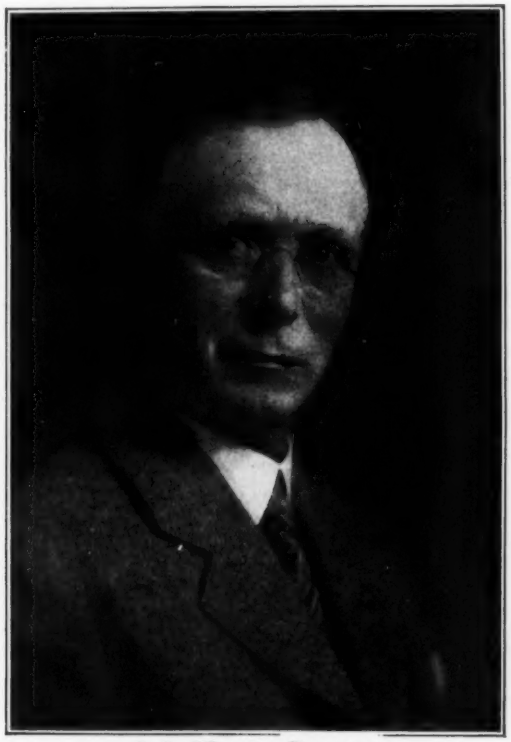
S. L. Willson, President of the American Writing Paper Co., Holyoke, Mass., Is Reelected President for Third Term To Complete the Program of Reconstruction of the Association Started Last Year—President Willson Warns That Manufacturers Must Look Ahead and Through New Methods and Improved Equipment Shape Prices Within Reach of Consumers—Symposium of Business Conditions

THE fifty-fourth annual meeting of the American Paper and Pulp Association, which was held at the Hotel Pennsylvania on Thursday, proved one of the most interesting and important gatherings in the history of the organization. President S. L. Willson called the meeting to order at 10:50 A.M. The minutes of the fifty-third annual meeting were approved without reading.

In his annual address, Mr. Willson declared that, due to the keener competition, and to the ever changing requirements of the consumer, every manufacturer to be successful must look ahead and prepare, through new methods and improved equipment, to manufacture at prices within the reach of the consumer such articles as he will purchase. "We need right now," said Mr. Willson, "new items and new ideas in our manufacturing and distributing structure." To secure the lowest manufacturing costs, mass production is one essential. Manufacturers during the past fifteen years have given much thought to the problems of "costs," and great progress has been made in that direction, but the distribution problem has been neglected to some extent.

Mr. Willson stated that the wholesaler today is supplied with goods at a margin over cost, which twenty-five years ago would have been absolutely ruinous to the manufacturer. It would be ruinous today if it were not for mass production. The present greatest problem in industry is the question of sales and distribution. This problem has not been solved to the same extent as the cost problem of the manufacturer, because the manufacturer is but the center from which the goods start on their journey for consumption through several middlemen, each of whom expects compensation for the service rendered.

With some commodities the problem of lower costs to the consumer has been partially solved through direct sales or through chain store distribution. In the paper business it has also been partially solved—by sales direct from mill to the consumer. This is possible only with certain types of papers and to certain classes of consumers, such as publishers, converters and the larger consumers of printing and wrapping papers, but many types of commercial papers must necessarily be distributed as in the past through the merchant, and sold by him to printers or other converters who prepare the paper for its commercial use. The present system has been in use for a century and has become complicated by the numerical growth of distributors, each scrambling for their portion of sales. It is competition which is called the life of trade, but it is a question whether such competition is productive of the best results and in the interest of the consumer.



S. L. WILLSON, PRESIDENT

Summing up the situation, Mr. Willson continued: "We need controls in the expansion of equipment, just as badly as we today need control of production in order that it shall harmonize with consumption. We all know that during the past fifteen years there has been great over-expansion, and that even in the face of that well known fact, new mills have been and are still being erected, and aggravating an already serious situation.

"I believe an industrial research commission, authorized by Congress, and acting under the supervision of the Department of Commerce could control excessive expansion with benefit to everybody, including the investing public. In effect, it would be Budgetary Control. This commission should be vested with authority to issue permits for expansion projects that contemplated increased production of basic commodities having nation wide distribution, only after it shall be shown that the markets could absorb the additional production under healthy competitive conditions. It would stabliize production, prices and employment.

"The application of some such plan during the past few years would have smoothed out some of the peaks and valleys in business that have resulted from the law of the jungle which has been applied after the building of new mills and the installation of additional equip-

ment, and which has been operative in some branches of our industry within the past few years, and particularly within the past two years. The five-day week has been suggested as a solution. Your association would welcome your views on this or any other industry problem."

At the afternoon session, following the report of the Resolutions Committee, a symposium on business conditions in the industry was held and interesting and informative addresses on the leading divisions of the industry were given by the following: Writing Paper—B. A. Franklin, Strathmore Paper Company; Glassine—Folke Becker, Rhinelander Paper Company; Groundwood Papers—Edgar Richard, Pejepscot Paper Company; News—J. L. Fearing, International Paper Company; Tissue—M. L. Dinkelspiel, National Paper Products Company; Boards—Henry D. Schmidt, Schmidt & Ault Paper Company, and Sulphite Paper—P. S. Fiske, The Parker-Young Company.

Col. B. A. Franklin, chairman of the Nominating Committee, reported that his committee had unanimously decided to re-elect S. L. Willson for another term in order to carry on the good work inaugurated under his leadership. The officers for the forthcoming year are therefore:

President, S. L. Willson, American Writing Paper Company, Inc.

Vice-President, George H. Mead, The Mead Corporation.

Vice-President, W. L. Carter, Nashua Gummed and Coated Paper Company.

Executive Committee: George W. Houk, Hawley Pulp and Paper Company; D. C. Everest, Marathon Paper Mills Company; Henry D. Schmidt, Schmidt & Ault Paper Company; A. R. Graustein, International Paper Company; Norman W. Wilson, Hammermill Paper Company, and David Luke, Jr., West Virginia Pulp and Paper Company.

PRESIDENT'S ADDRESS

S. W. Willson, president of the association, delivered his annual address as follows:—

Few have escaped the effect of the depression which has existed during the past year. Your association has by no means been exempt. New problems have arisen in our association activities, the same as in private or corporate industrial concerns.

For many years your association was supported by voluntary contributions, or arbitrary assessments, with practically no regard to equity in such support. In order to increase our working capital and to have the expense prorated upon a fair basis, a plan of reorganization was approved in our meeting a year ago. During the institution of this plan we learned that the purse strings of industry had been tightened due to the business depression and that our campaign for association funds faced an acid test, and we also learned that the strength and loyalty to our association was on trial. We not only passed the acid test, but its strength and the loyalty of our members were proven.

The inauguration of any plan, however good, under the business conditions of the past year, in which the raising of money was the chief problem, appeared to be an impossible task, especially as most concerns had applied a policy of retrenchment. It was my ambition to have our plan well established and functioning properly—from a utility as well as a financial standpoint—by this time. To what extent this has been accomplished will be left for your decision. The efforts towards its consummation has been most efficiently conducted by our general manager, Mr. Jesse H. Neal, who will later give you more of the details.

I believe the new plan, when fully operating, will become very effective and beneficial. It was necessary to take it up step by step. Many hurdles and handicaps were ahead of us.

Most of our memberships were continued—although in some instances the amounts paid were two, three or more times those paid under the old plan of assessment. Then there were quite a number who demurred because of the increased payments—but most of this group, when convinced of the benefits to be derived through their membership, decided to continue with the association, and we are now also receiving their loyal support. Another small group dropped out completely, but with a few exceptions this group comprised small companies who felt the real necessity of retrenchment.

Statistical Department

As business men you personally endeavor to keep in touch with current events. You have elected to have your association specialize for you in paper and pulp. From it you seek all the worth-while news of the paper industry, fresh enough to guarantee its usefulness.

In no previous year has there been as much valuable data sent to our members. It has been our aim to secure up to date and accurate statistics and general information on all matters pertaining to the paper and pulp industry—not only domestic but world wide. More unusual conditions have arisen during the past year than are ordinarily crowded in any twelve months' period. We have attempted to carefully assemble, analyze and interpret them in a way that would enable you to visualize and apply them with benefit to your own business.

Cost Department

During the past year we have heard a great deal about economics—and I often wondered just what that word meant. No definition of the word satisfied me until I ran across the following—"'Economics' is a word derived from a Greek term meaning 'Good Housekeeping.'" That brought home to me its real meaning. The good housekeeper applies the principles of economics. She knows what is in the home—has a place for each article, where, either for its utility or artisic effects, the most can be had from it. Everything is kept in an orderly fashion; the expenses are budgeted, and the children even warned not to use the guest towels.

Economics in industry—means "Good Business Housekeeping." During prosperity periods we see lavish expenditures—excessive expansion and wasteful practices. Business for many years was operated with a formula *now* just as much out of date as is the old "rule of thumb." Science has become an important factor in business and is coupled with art in industry. Science is simply the orderly arrangement of known facts—art is the proper application of those facts. A single fact is worth a folio of arguments. In the paper business we apply both and in the combination of the two we endeavor to approach perfection.

We invest our money to secure a reasonable return for its use, and the right to a fair return on invested or working capital can not be disputed, so, why not adopt and operate with a formula which is predicated upon reasonable profits deducted from the income dollar as the basic factor. The application of such a formula necessitates a better knowledge of business facts; a better knowledge of the variables in your business from the raw materials to the income dollar and the allowable expense. It will necessitate budgetary controls, but from these will come a closer union between the different departments of the business. During business depressions it may not be possible to keep "Allowable Expense" down to a point where the "Reasonable Profit" results, but the more detailed knowledge of the business, thus secured, will enable you to take a more hopeful view of the future, thereby helping to destroy pessimism, worry and fear, which retard progress, and replacing them with optimism, built of the courage and confidence that will develop from a better knowledge of budgetary control facts. We should not permit traditions to influence our attitude toward new ideas, particularly in this age of changes. We know that profits secured under recent conditions have come principally from the savings secured through controllable factory costs rather than from higher prices. Intense competition demands operating controls through budgets, and a thorough understanding of some flexible method or methods of arriving at and applying a standard cost system.

Developing a system or systems and pointing the way for their proper application is now one of the functions of this association. There can be no rigid rule or method—there may be several—each of equal value, the application of any of which

brings you to the same destination, the same as two or more railroads between two points will do.

Until the past year there existed a Cost Association which was supported and financed independently of the American Paper and Pulp Association. Under our present plan, a Cost Department was organized—the former association was dissolved, and the activity relative to "standard costs" is now financed and guided by the parent association. Important conferences have been recently held—committees have been selected to formulate standard cost accounting methods, with sub-committees to make studies and recommendations for each branch of cost accounting. More of the details will be given in another report.

Tariff Committee

Your Tariff Committee has functioned in a manner to deserve the commendation of all manufacturers of paper. It has not attempted to handle tariff matters pertaining to raw materials, as those have been left to the individual mills because of the conflicting interests and view-points, but confined its efforts to securing ample protective tariff schedules on finished paper.

After the presentation of our tariff schedule to the Ways and Means Committee of the House of Representatives and to the Finance Committee of the Senate, the Chairman of those Committees complimented our Tariff Committee for the clarity of the presentation—and for the accuracy of the facts submitted affecting the various schedules where changes were requested, and your Committee's average of accomplishment was nearly 100%. The briefs submitted were prepared for your Tariff Committee by our attorneys—Wise, Whitney and Parker, who were given valuable assistance by the Import Committee. There is still a credit due them for work done for the Tariff Committee which should be paid. The work of that committee was begun under an agreement operating prior to our present reorganized association—and payment contemplated at that time by voluntary subscription. If you are approached to make up the deficit, I hope you will favorably respond.

Pulp Wood Department

Our Pulp Wood Department under the supervision of Mr. Charles W. Boyce has been of great value during the past year. Their periodical detailed bulletins concerning available pulp wood —production and consumption of the various grades of pulp with relative prices applying thereto have been filled with information, valuable alike to pulp producers and paper manufacturers—particularly in relation to the importations of Russian pulp wood and its effect upon domestic producers. Your association is keeping in close touch with the activities on pending bills in Congress in order that we may be of help to you on this very important and serious problem. It is impractical for the association to act officially in this matter, but our individual interest should prompt all of us to carefully consider the future effects upon our industry.

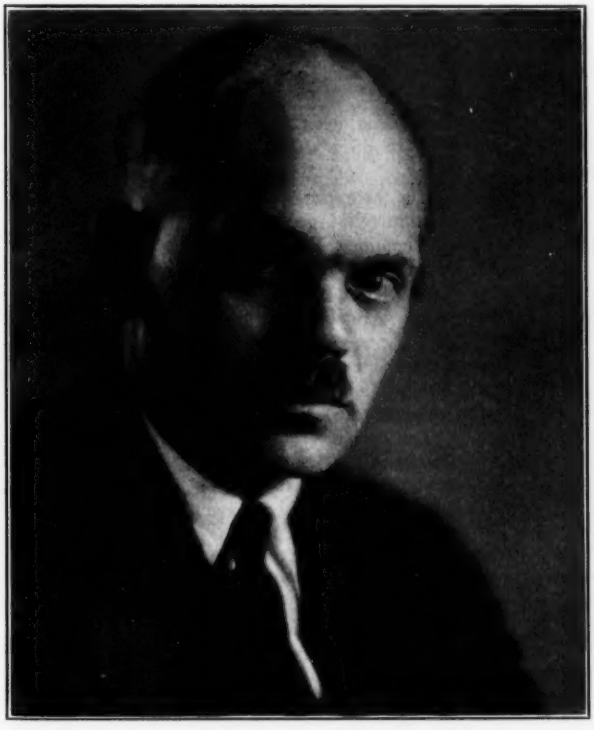
Waste Utilization Department

Many of our members may not be familiar with the work of Mr. C. M. Baker, Association Engineer in charge of the Waste Utilization Department, but to him should be given credit for the large savings made in many mills—through the utilization of white water and for his most effective work in the matter of legislation on stream pollution. This service is available to our members, and affords in many cases an opportunity to more than save you the cost of your association dues.

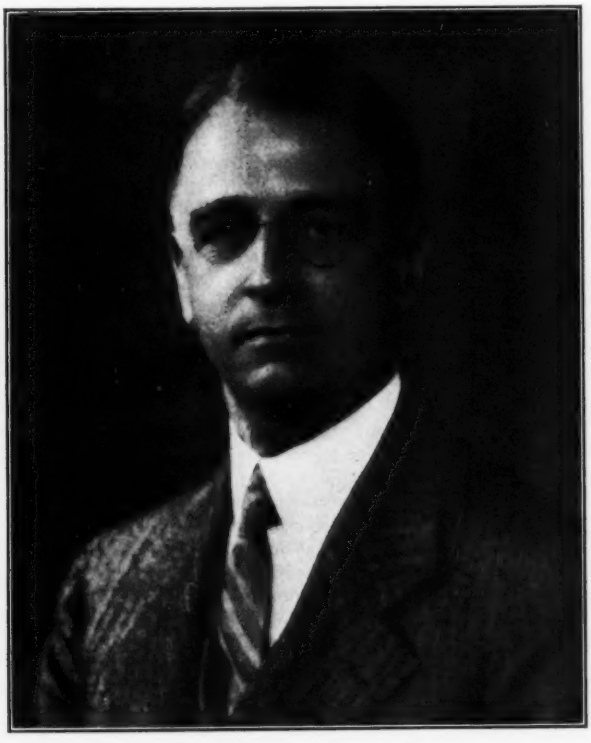
There have been other important activities carried on in different departments and branches of our association. Many of the committees and departments are submitting printed detailed reports for your consideration, and I shall therefore not attempt to enlarge upon them.

It may appear to some that no direct benefits have been received from some of these activities, but you will find that beneficial results are often so intangible as to defy measurement, yet are existent, and will in time become apparent.

There are in this gathering many whose experience in the



Charles W. Boyce, Secretary



Jesse H. Neal, General Manager

paper business covers periods of ten, twenty, thirty, forty or more years. Even those whose experience is of short duration, who will compare their previous opinions of the future of the paper industry with their present views, will be impressed with the constant changes that have taken place, not only in production and merchandising practices—but in the contacts with competitors, and will recognize the necessity of preparing for future changes. Past experiences are simply forerunners of the changes yet to come.

Due to the keener competition, and to the ever changing requirements of the consumer, every manufacturer to be successful must look ahead and prepare, through new methods and improved equipment to manufacture at prices within the reach of the consumer such articles as he will purchase. We need right now new items and new ideas in our manufacturing and distributing structure. To secure the lowest manufacturing costs, mass production is one essential. Manufacturers during the past fifteen years have given much thought to the problems of "costs," and great progress has been made in that direction, but the distribution problem has been neglected to some extent.

The wholesaler today is supplied with goods at a margin over cost, which twenty-five years ago would have been absolutely ruinous to the manufacturer. It would be ruinous today if it were not for mass production. The present greatest problem in industry is the question of sales and distribution. This problem has not been solved to the same extent as the cost problem of the manufacturer, because the manufacturer is but the center from which the goods start on their journey for consumption through several middlemen, each of whom expects compensation for the service rendered. With some commodities the problem of lower costs to the consumer has been partially solved through direct sales or through chain store distribution. In the paper business it has also been partially solved—by sales direct from mill to the consumer, but this is possible only with certain types of papers and to certain classes of consumers—such as publishers, converters and the larger consumers of printing and wrapping papers, but many types of commercial papers must necessarily be distributed as in the past through the merchant, and sold by him to printers or other converters who prepare the paper for its commercial use. The present system has been in use for a century and has become complicated by the numerical growth of distributors, each scrambling for their portion of sales. It is competition which is called the life of trade—but it is a question whether such competition is productive of the best results and in the interests of the consumer. I shall make no effort to suggest a remedy—but leave with you the prediction that a revision in the present methods of hand to mouth buying from the mills and in the distribution of paper products will develop—the same as with other commodities. We must admit the paper industry has been slow to recognize and to adopt some of the economic principles that have been applied to other lines.

I believe the formation of large units in industry and the transaction of mill and merchant business upon a larger scale would be economical and in the interest of the consumer. Manufacturers should not be called upon to perform the functions of the merchant as he is doing today. Split into a thousand units, as we are today, a competitive condition has developed that prevents stabilization and standardization of products and fair prices. The larger units—both manufacturing and distributing—if operated with honest management and with recognized business ethics applied—would be a protection not only to the consumer—but to the smaller independent units engaged in manufacturing or in distribution, through the elimination of cut-throat, destructive competition. In other words—*industry must be of a bigness to match the bigness of the nation,* with strong units to cope with the peaks and valleys in business through the regulation of production and stabilization of the markets.

Corporations now realize that productive capacity must wait on slow growth in consumption. Therefore, a proper basis for figuring costs should be given consideration.

A great many mills have been using 80 per cent of full time as the actual running time of machines, thus assuming that during 20 per cent of the time they will not be making paper due to changes, wash-ups, repairs, and the like. This does not allow for the additional down time which must surely come due to seasonal variations of orders or due to business depressions which must be faced, and for the further fact that additional capacity must always be constructed in advance to take care of the peak loads or demands and that no plant can continuously run all of the available hours over a long period of time.

It is my opinion that the allowance of 20 per cent should be increased to cover the forced idleness certain to come not only over a year, but also over a period of years, and that 60 or 65 per cent would be a better figure to use than 80 per cent, with the selling prices regulated accordingly. This idea is suggested as an insurance feature in business—and as a possible remedy for the smoothing out of some of the peaks and valleys, which in the past have been so pronounced. Cyclical depressions have regularly appeared—yet few, if any, have ever prepared for them. It seems strange, too, because as we visualize our business we find—"Reserves for Depreciation"—"Reserves for Texas"—"Reserves for Bad Accounts" and other possible losses. We carry "Fire Insurance"—"Liability Insurance"—in fact, we protect ourselves against all possible losses or inevitable losses, except in the case of losses in production and sales—due to depressions in business. By changing the basic percentage for operation to a lower figure—with selling prices adjusted to harmonize with it, a reserve could be built up during prosperous times that would enable most corporations to meet the troublesome problems of depression. The unemployed could be relieved, as labor could be cared for upon some basis during depressions that would tide them over by a guarantee of part time employment or wages to those who had been continuously employed for a specified period. This would serve to reduce the turnover in many mills—and consequently, it would increase the efficiency in operations. Merely as a suggestion—would not a law, compelling such a reserve, and providing for its use, regulated in some official manner, during periods of depression, help to smooth out peaks and valleys in business?

At the risk of seeming even more radical in my ideas on stabilization, I want to offer still another thought along these lines.

We need controls in the expansion of equipment, just as badly as we today need control of production in order that it shall harmonize with consumption. We all know that during the past fifteen years there has been great over-expansion, and that even in the face of that well known fact, new mills have been and are still being erected, and aggravating an already serious situation.

I am generally opposed to bureaucracy, and too many Government commissions controlling activities in industry, but some of them are of real value as restraining influences against destructive competition.

I believe an industrial research commission, authorized by Congress, and acting under the supervision of the Department of Commerce could control excessive expansion with benefit to everybody, including the investing public. In effect it would be budgetary control. This commission should be vested with authority to issue permits for expansion projects that contemplated increased production of basic commodities having nation wide distribution, only after it shall be shown that the markets could absorb the additional production under healthy competitive conditions. It would stabilize production—prices and employment. The application of some such plan during the past few years would have smoothed out some of the peaks and valleys in business that have resulted from the law of the jungle which has been applied after the building of new mills and the installation of

additional equipment, and which has been operative in some branches of our industry within the past few years, and particularly within the past two years. The five-day week has been suggested as a solution. Your association would welcome your views on this or any other industry problem, as it is obvious that in any industrial field constructive thinking can not be limited to the opinion of any one man or any one corporation or association. Even with business active there is at present over-capacity sufficient to care for normal increased consumption of 3 per cent annually for the next eight years, and it is to be hoped that any plans for expansion will not be approved without first taking this condition into consideration.

I know the above suggestion is a plan not now permissible and at present seems radical, but isn't it worth thinking about that—or some other remedy? I am simply sowing seeds, knowing that some fall upon fertile ground and others upon barren soil. Progress is the outgrowth of thought, the expressions of which are ofttimes considered radical, but when radicalism impels the serious thoughts of others—sane and practical remedies usually develop.

I want to express my appreciation to all who have supported the association in its work during the past year, and particularly to the personnel at the association headquarters, and the executive committee.

GENERAL MANAGER'S REPORT

Jesse H. Neil, general manager of the association, presented his annual report as follows:

Leaving out the appetizer, dispensing with the soup and the entree, let us proceed at once to the meat of the subject before us, namely the state of the organization you have established for collective action and common benefit.

A year ago President Willson said, "I have been impressed as have my predecessors, with the inadequacies of our parent organization to carry out effectively the objects for which it was created. Our industry has leaped ahead while the Association activities have been so divided, so restricted, and so limited in resources, that their present value to members has been greatly curtailed."

He then went ahead with an inspiring appeal to members to join in an effort to create an organization that would be adequately equipped and financed to meet the requirements of the great industry it represents.

Evidently he struck a responsive chord in your minds because you directed the Executive Committee to put into effect a number of reforms that had been discussed and recommended by previous Executive Committees, special committees, and former secretaries of the Association.

Last year, therefore, it was our task, and it was a task, to convert your wishes into realities. You directed us to establish a fair and equitable plan of assessing dues based upon the gross sales of members. Undoubtedly it was a step of first importance and no one questioned its essential character, but it would have been difficult even in a good year because it involved the overturning of long intrenched customs. In a year such as 1930, it was a severe test not only of administrative efficiency, but more particularly of the morale and cooperative spirit of the members.

Nevertheless, faith in the soundness of the plan and confidence in the courage and vision of the members, we went ahead as directed. Now that it has been done, I am free to admit that the first two months of our fiscal year created an atmosphere at headquarters that was a little depressing.

The wisdom of your judgment, however, was fully justified in the final developments. Once the members grasped the idea, there was no hesitancy in their acceptance.

A year ago also you adopted a resolution expressing your belief that we should have a more closely knit national organization; that certain service activities should be brought under central control, and the financing consolidated.

Scattered Services Merged

Accordingly, we took over the former Cost Association, made it the Cost Department of our organization, and provided for its maintenance from our budget. The old Woodlands Section which had been financed largely from separate contributions, became our Pulpwood Department, and is also supported by our treasury. The Waste Utilization and Stream Purification Committee abandoned its polysylabic name, its separate appeal for funds, and became our Engineering Department.

The hat used to be passed to support certain statistical services such as the book paper reports, and this too was discontinued. I think the principle of what we did is well illustrated by the experience of a Scotchman who was undergoing an examination for a position on the London police force. They asked him what he would do to disperse a crowd; he responded, "I dinna ken what ye do in London, but in Aberdeen where I come from, we pass the hat."

While putting this change into effect, the regular work was not only maintained but stepped up and intensified to meet the increasing demands for service resulting from the abnormal business situation. This too, without any increase in our personnel. You were kept acquainted with all of these things in greater detail than possible here through our monthly news bulletin.

With the refurbishing of our service structure and with the expansion of our work and enthusiasm, we awoke to the fact that our old quarters were inadequate and hardly creditable to the industry. After much searching we found new office space superior in every respect and at no greater cost. The huge task of moving the accumulated records of many years was accomplished without missing a mailing. Come in and see us before you leave; we occupy choice space in one of the best of the new buildings in the Grand Central Zone.

Our bulletins have told you about our new Book Paper Committee. It has no report to make at this meeting because it has just begun its conferences with a corresponding committee from the National Paper Trade Association to revise the Book Paper Trade Customs. This work has the support of mills representing over 80 per cent of the book paper tonnage and is an encouraging start towards the ultimate formation of a Book Paper Division of the American Paper and Pulp Association, an outcome greatly to be desired.

After considerable effort, we succeeded in getting the Glassine mills to cooperate in gathering the essential statistics of their field, which we are handling for them through our Statistical Department. If this associated activity for the common good should lead to the formation of a Glassine Division, our staff stands ready to furnish the necessary facilities.

It developed upon us after the dissolution of the U. S. Pulp Producers Association to carry on the statistical work for them and we are planning extensions of this service.

In hastening through a recital of a few of the high spots of departmental activities I request your close attention, because you are the stockholders, so to speak; you are the ones who have built and supported the organization, the men who have the final word as to policies, and who stand to win or lose most by our success or failure.

Pulpwood

The ability to make war depends upon a supply of nitrates with which to make explosives. Germany having no domestic supply of nitrates began before the war to develop the process of snatching nitrates from the circumambient atmosphere.

America depended upon Germany before the war for dyes but under the pressure of necessity, we learned the technique of making the elusive coal tar derivatives turn red, green, blue or yellow upon command.

There seems to be no limit to human resourcefulness under heavy enough compulsion, but we are not yet able to produce cellulose from the air. Nevertheless, the growing world demand for cellulose has stimulated research and ingenuity to develop

new sources of supply both from new as well as established woods, to say nothing of plants, grasses and cornstalks.

The perfection of a new process of producing pulp rendering new woods available might easily force a complete re-alignment of the industry. In any event, the industry must keep in touch with present pulp and pulpwood conditions in this country and abroad, for pulp is now an international commodity. Everything hinges upon and revolves around an adequate supply of paper-making materials at economic prices.

This is fundamental and so is the work that our Pulpwood Department is doing to gather, interpret and disseminate accurate data on forestry, pulp and pulpwood. Last year we furnished you, through our publication "Pulpwood", regional wood surveys for the United States and a world study of woodpulp production.

But the functions of our Pulpwood Department do not stop with the collection and classification of facts; it inquires into why things happen and endeavors to point out future trends. In addition to membership contacts, this department is the point of contact with all state and federal departments having to do with forestry and endeavors to protect paper and pulp interests in the shaping of governmental policies. With the proper support this department of our work can be made a still more aggressive instrument to advance the collective welfare of the industry in all its branches.

Statistics

Business facts or statistics furnish the only basis for a correct diagnosis of an industry, and as in medicine no one can prescribe a remedy in the absence of a reliable diagnosis. So the chief function of our statistics is to enable you to interpret conditions in the light of previous experience and attendant circumstances. Of course we mustn't mistake appendicitis for plain tummy-ache.

Predictions as to the probable course of business may be based upon business facts with the aid of sound judgment and perhaps a small gift for clairvoyance, but usually statistics are more valuable as a guide to immediate plans and policies and as a standard by which you can determine the relative position of your own company.

We are, however, studying the development of reports that will accurately forecast the trend and volume of business in certain grades, weeks and possibly two months in advance.

We can't take too narrow a view in our industry. No matter what grade you are making, it is necessary to consider the trends throughout the other grades, because of the interrelation of conditions peculiar to the paper industry.

Our office is the central clearing house for both foreign and domestic data.

Because of conditions in 1930 it was fortunate that we had this central clearing house. Prices were (well you know what happened better than I); grades were being shifted; there were new conflicts and antagonisms between grades; important regional developments were in progress on the West Coast and in the South; there was an over-production of foreign pulps; and markets were timid, uncertain and vacillating. The grievous state of general business dragged discouragingly at every point.

This situation creates a hunger demand for FACTS, dependable, comprehensive facts upon which decisions might be based, and we are gratified that we had the organization and the support necessary to meet this emergency, and to contribute to this extent towards bringing about a more healthful condition.

In this as in other departments, we owe much to the cooperation of the various grade associations.

Engineering Department

Fifty mills were visited last year by the head of our engineering department, and he asserts that at a conservative estimate, a million dollars a year might be saved by just these mills, through appropriate systems of white water utilization.

This department contributed valuable assistance in the planning and conduct of the sanitary survey of the waters of Maine, which was sponsored and financed by the paper mills in that state.

Personal aid was given by our engineer to mills in litigation over alleged pollution of waters, and to others threatened with litigation.

At the same time close watch was kept of legislation in states having pulp and paper mills. Mr. Baker reports that we must face the prospect of legislation on stream pollution in a number of states and be prepared through friendly cooperation to assure the adoption of fair and constructive measures. More doubtless will be gained in this way than by unyielding antagonism.

An outstanding book on white water surveys was published by the Engineering Department during the year that will be the standard reference work of the kind for many years.

The National Association of State Sanitary Engineers is working with us through a special committee and the department enjoys friendly contacts with welfare associations interested in the preservation of fish life.

Cost Department

This, as you know, formerly was the Cost Association of the Paper Industry, and was made the Cost Department of our Association last April.

There are two phases of our cost work; one is to carry the message of accurate costs and sound accounting to the whole industry in an educational way; the other to develop practical plans.

The first phase was well covered in our publication "Pulp and Paper Profits", trade journal articles and various sectional meetings.

Upon the second phase a promising start has been made to establish a uniform basis of cost accounting principles. You have been advised of the Cost Congress held at Buffalo and in the detailed report of the Cost Department you will find all the particulars.

Oftentimes I have heard business men discuss the measures for relief that might be taken by an industry if only we didn't have the Sherman Act hanging over us, yet even without the anti-trust laws, nothing could be done unless men were able to act in concert.

The question of uniform cost practice is not in any way affected by the Sherman Act or any other law, except the law of common sense and self-interest. The way is wide open for the industry, not only to set up standards of cost accounting, but to do so on a uniform basis with all of its consequent benefits.

On the practical side also, I want to call your attention to the booklet entitled "What Price Prosperity in the Pulp and Paper Industry" which was distributed about two weeks ago. It is a searching analysis of the reasons for success or failure, based upon a study of income tax returns. We commend it a sound and practical guide to financial management, and possibly as a part of the remedy for ruinous price competition.

National Paper Council

At the last annual meeting you took an important step in authorizing the organization of the "National Paper Council", which will become as time goes on, a stabilizing influence in inter-group relationships and a source of wise counsel in matters affecting the whole industry.

Just a word to refresh your memories as to the constitution and duties of the Council. It is composed of one representative from each grade group affiliated with the American Paper and Pulp Association, and its specific functions are to act as the Resolutions Committee during conventions, provide a Nominating Committee in advance of the biennial elections, and to act in an advisory capacity to our Executive Committee either upon its own volition or by request of the Executive Committee.

Because of the unsettled conditions plus the initial inertia which any new idea must overcome, the Council was not completed until a few weeks ago. I believe that its place in our organization scheme is now well understood and that there is no reason why the Council should not operate in its advisory capacity throughout the ensuing year.

The Council is taking an active part in the present meeting. It provided the Nominating Committee and met at dinner last night to give formal expression in resolution form, to the policies which in its opinion should govern the Association next year. In other words, as was originally intended, the official representatives of all organized paper groups are in this way registering their wishes as to the official set-up and operating policies of the national association.

Membership on the Council should be regarded as one of the highest honors in the paper industry, and I hope that the grade groups in selecting the National Councillors for the ensuing term, will continue to designate only men of outstanding ability, recognized positions, and seasoned judgment.

Commercial Arbitration

Following your instructions, a committee has made an investigation of the possibilities of commercial arbitration for the paper industry and their findings have been printed for your further consideration.

Projected Exhibits

Preliminary steps have been taken to assure a suitable paper exhibit at the forthcoming Chicago Centennial. A committee has been appointed and tentative plans prepared.

They are building in Philadelphia a Benjamin Franklin Memorial building in which will be a technical museum. Space has been allotted for a permanent paper exhibit in connection with an exhibit of the graphic arts. A committee also is working on plans for this exhibit.

Bulletin Service

Bulletins speak for themselves, but many of you have given us the encouragement of expressing your satisfaction with the present conduct of this service. The monthly news bulletin started a year ago to meet a real need.

Paper On the Air

On February 10th the story of Paper was told on the air by President Willson in a nation-wide hook-up for which courtesy we are indebted to the Westinghouse Electric & Manufacturing Co. Mr. Willson acquitted himself most creditably judging by the response from all parts of the country.

New Use For Paper

Early in the year we suggested the adaptation of paper for auto seat covers, and summer jackets for furniture. At least one large member company has completed satisfactory experiments and is prepared to enter the market in the Spring, for a share of this enormous potential tonnage.

An International Information Bureau

There is no cessation of the stream of inquiries from our own country and abroad, most of them of real importance and many result in business for our members. A few, however, are humorous. One wanted to know the distribution coefficient between a paper towel, the soap and the skin. Another desired to ascertain the number of knots in a pine tree twenty years old, grown in New Zealand.

Under this head should be mentioned the personal service that our facilities enable us to render members in their special problems.

Paper Exports

Last year we exported paper and paper products to the amount of $30,301,759 or about seven million dollars less than last year. The reduction in tonnage doubtless was less than in dollars because of the lowered price levels. Nevertheless, there was a considerable loss in tonnage.

As you will recall, both President Willson and I proposed at the last annual meeting that the Association undertake a limited amount of promotion work to stimulate interest in our products in foreign countries, and the members gave their complete approval to the plan.

I am sorry to report, therefore, that financial limitations compelled us to defer the bulk of this work, but we are more strongly convinced than ever, of the need and the opportunity for collective effort to expend foreign markets, in the interest of all American producers. Whatever money is spent upon this project will produce proportionately better results per dollar of expenditure than could be achieved by any individual concern and similar efforts have demonstrated too that in many respects associated effort can bring results that are not to be obtained otherwise.

We succeeded, however, in persuading the Paper Division of the Department of Commerce to enlarge its activities in our behalf. As a result of our representations, they have begun the compilation of an international glossary of paper terms, which, when completed, will show the corresponding trade term in each foreign country for each American paper trade term, including units of measurement. For this purpose an additional appropriation was given the Paper Division.

Another task that we have laid upon their door-step is a world survey of paper production and consumption. We have told them that we want to know how much paper by grades is made in each foreign country; how much is imported and from what countries; and the total annual consumption. Other industries have the advantage of such information, why not the paper industry.

Central Research Committee

Following out your wishes as expressed at the last annual meeting, a Central Research Committee was appointed which has made good progress towards the objectives laid down for it, namely to work out a method for the centralized control and direction of paper research work. The members of the committee, representative technical exports all of them, held meetings with the bureau of Standards, Washington, the Forest Products Laboratory, Madison, and the Institute of Paper Chemistry, Appleton.

The Association is indebted to them for the time taken from their own affairs to devote to the advancement of the common welfare. They have made a fine start and the work should go forward.

Standardization Work

I can but touch upon the exhaustive studies made by this hard-working committee, and shall have to refer you to their detailed, printed report.

Several meetings were held by the Standardization Committee, both in conjunction with other groups, as well as separately. Questionnaires were sent out to printers, advertising agencies and paper merchants in an effort to get the facts regarding their real needs and preferences in the way of paper samples. Nothing was left to prejudice or guess work.

As a result the Committee presents you today with a mass of tabulated evidence indicating a possible saving of very large sum of money in paper samples and points the way to intensified effectiveness of paper sampling by both manufacturers and merchants.

This work should by all means be continued by a committee authorized to bring about a practical application of the reforms and economies logically indicated. Eventually this one activity will mean a saving of several times the total annual expense of the American Paper and Pulp Association.

Tariff

During the year the tariff bill was made a law and you had a full report from the Tariff Committee of the changes made in the rates on paper. A report of the further activities of the committee has been printed, which will tell you of our success in winning the first case involving paper, to be brought before the new Tariff Commission.

Under the new flexible provisions of the law we shall have to maintain constant watchfulness to protect the interests of the industry.

Proposed Government Paper Mills

When the bill providing for a Government paper mill was introduced, we sounded out the sentiment of the industry and re-

ceived over 100 letters and telegrams of protest. With this backing a special committee went to Washington and spent two days testifying before the House Committee that had the bill in charge. While we have no official report it is believed that the bill will die with the present session of Congress.

This situation afforded a perfect example of the power and effect of unified opinion and action, as well as the advantage of effective machinery of action ready for instant response to an emergency call. We cannot wait until there is a fire to organize a fire department.

Other Washington Contacts

The Customs Department proposed a ruling which would have compelled labeling the point of origin on each piece of pulpwood and each lap of pulp brought into the United States. We protested vigorously. The ruling was withheld.

A case yet undecided in the proposal to require a consular invoice at a fee of $2.50 each on all imports. Through our attorneys we protested against the application of this ruling to duty free articles which would include pulp, pulpwood and newsprint.

A representative of our Association participated in the Washington conferences held by the Chamber of Commerce of the U. S. A. in support of the bill for standard forms on ocean bills of lading.

The Federal Trade Commission has required attention both by mail and in person in connection with certain inquiries into practices of members.

Our Statistical and Pulpwood Departments have worked closely and continuously with the Bureau of the Census and Agricultural Departments.

We participated in the work leading to the appointment by President Hoover of the National Timber Conservation Board on which is one of our own members.

We attended meetings at the Division of Simplified Practice in the Department of Commerce, and carried on contacts with all departments of the Chamber of Commerce.

Dangerous Legislation

Speaking of government and legislation, we may well view with apprehension the present tendencies in state and national affairs. We appear to be entering upon an era of emotional and socialistic legislation in every section of the country.

Heavier and heavier burdens are sought to be imposed upon business on the one hand and greater restrictions on profitable operation on the other hand. There is and will be an increasing necessity for the paper industry to present a solid and unbroken front against the assaults of demogogues temporarily in places of power, and the zealots who are sincere but misguided.

From a trade association standpoint, however, there is food for thought in a recent statement by Henry S. Dennison the well known paper converter. He said "Industry and individuals can only ask to be 'let alone': can only demand freedom; to the extent they are willing to impose self restraint upon themselves."

Our pulp and paper army is facing other enemies aside from disruptive social legislation—some of them are, economic illiteracy; destructive practices; wastefulness; profit destroying influences from within and without; exploitation of natural resources; inequitable taxes; and more.

Perhaps we should remind ourselves that an army with internal dissension, fighting within its own ranks, is weak on both attack and defense.

What About Depression?

For the time being we are not so much concerned with the reasons for recurrent business cycles ending in so-called depressions, as in what can be done about it right now to hasten recovery and mitigate the severity of the next depression. Parenthetically, I don't like the word. We might substitute a new term—"A recess for repair, reform and regeneration."

From current business literature, the public forum and Congress, we are getting many strange and fanciful ideas as to what should be done, but we are face to face with conditions as they are; the paper industry must be maintained on a profitable basis during the interim between the actualities of today and the Utopia of tomorrow. The more we hear, the more apparent it is that the job is up to us.

Certain facts are known beyond question. From farm, mine, forest and mill, omes more wealth than can be used; producers and consumers are sick from overfeeding. It is plain that all industry needs a balanced diet, that production must be geared to consumption. By cooperation in your trade association you can ascertain the facts as to consumption requirements, as to market trends, and your machinery of production can be and must be adjusted to those requirements. The problem goes beyond these factors, of course, but this much we know and this much we can do.

Furthermore, we can start right now to institute reforms and improvements that will aid us in bridging the next depression with minimum loss and trouble. As President Willson said in his opening address today, the time is ripe for all industry to begin the accumulation of a depression insurance fund.

Depression reserves should be just as legitimate an item of cost as depreciation, fire insurance, taxes, or obsolescence. We can avoid over-expansion during boom times. Perhaps it would be good economics to put surpluses into circulation to increase general buying power to offset surplus capacity instead of aggravating the state of unbalance by creating more production facilities.

We have been doing our bit to prevent the building of new pulp or paper plants during the past year by insisting upon fair consideration of the principles enunciated by Dr. Virgil Jordan when he said: "In the financing of specific enterprises and especially of mergers and consolidations, financial institutions appear to be working in the dark, without regard to the conditions of industrial capacity, supply and demand in particular lines, which should be carefully studied before financing is undertaken.

We have solicited and received many inquiries from all sorts of people and companies who were considering the erection of pulp and paper mills. We have not presumed to advise them to build or not to build, but we have said that no such enterprise should be undertaken without a thorough investigation of present capacity, present consumption and probable trends of consumption.

Nearly always their minds are focused upon the production problems without a thought of what is to be done with the products after they are made. That our efforts in this direction had a salutary and wholesome influence is evidenced by the fact that no one of the proposed projects has been started to our knowledge.

It would be hard to place a valuation on this service, but it has been worth much to the industry to have a clearing house for this kind of information.

I take this opportunity of expressing my warm appreciation of the efficient and loyal support of every member of our staff in carrying forward the work last year. In behalf of the staff also, I thank the members for their constructive criticisms, their patience and forbearance, and their many concrete demonstrations of confidence in the organization.

Water can rise no higher than its source, and if we have taken more forward steps than usual, we owe it to motive power and inspiration you have supplied.

ENGINEER'S REPORT

C. M. Baker, head of the engineering department of the American Paper and Pulp Association presented his annual report as follows:

One million dollars may be saved annually by 50 paper mills. This is a conservative estimate of the net savings that may be made in white water utilization by the application of methods suggested by the Engineering Department in mills visited during the past year. Surveys were made in 50 mills in 9 different states. It is interesting that the operating budget of the En-

gineering Department, $15,000 annually, is only 1½% of the estimated savings in white water utilization.

In addition to the work in white water utilization a survey of the principal streams in Maine regarding pollution was organized at the request of and in cooperation with the local state committee of the industry. Assistance was rendered also in connection with proposed legislation in two or three states and several mills were advised and assisted in connection with litigation regarding stream pollution. In general the past year has been an active one in the field, a total of 12 states having been visited. More definite contacts have been established with mill executives and personnel. The better understanding of the problems of the mills developed through those contacts will assist materially in rendering service that will meet the specific needs of the industry.

Reorganization

It will be recalled that this work was initiated by the appointment of a committee on waste utilization and stream improvement by the Association at its February Convention in 1926. This committee consisted of mill executives, technical men in the pulp and paper industry and five state sanitary engineers. Initially the work was financed by voluntary contribution solicited from the industry. The committee recommended the employment of an engineer to represent the pulp and paper industry in problems of stream improvement. An engineer was employed and commenced activities on November 1, 1927.

The past year marks some reorganization in executive policies although the activities have continued substantially as before. In the first place, the work has been taken over and completely financed by the American Paper & Pulp Association. Second, in reorganizing the activities of the Association the executive committee ruled that all committees should consist only of members. An engineering department was established and an engineering committee appointed. The activities in waste utilization and stream improvement have therefore been taken over by this department. The engineering committee consists of five mill executives formerly members of the National Committee on Waste Utilization and Stream Improvement, viz: S. B. Copeland, chairman, H. P. Carruth, W. W. Galloway, Felix Pagenstecher, George E. Williamson.

Believing that there was substantial value in the cooperation of the state sanitary engineers in handling pollution problems, the Conference of State Sanitary Engineers was requested to appoint a committee to cooperate with the pulp and paper industry. Complying with this request the following committee was appointed: Richard Messer, Chairman, Richmond, Va.; L. S. Finch, Indianapolis, Ind.; J. H. O'Neill, New Orleans, La.; Edward Wright, Jr., Boston, Mass.; G. H. Ferguson, Ottawa, Canada.

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Notwithstanding the reorganization which has been effected, the activities in waste utilization and stream improvement have been continued and conducted in substantially the same manner as in previous years.

White Water Utilization

White water utilization has been the outstanding activity during the past year. As previously stated, 50 mills have been visited and surveys made regarding methods of white water utilization. In each instance memoranda or reports have been prepared advising mill officials regarding possible improvements and methods that might be utilized to better conserve these wastes. It is conservatively estimated that the fibers now lost in these mills might be saved and utilized with a net return of $1,000,000 annually.

The Association's bulletin, "White Water Surveys," definitely outlines the first step that should be taken in any program of white water utilization. This bulletin describes methods of measuring flows and collecting and analyzing samples of white water. It has been distributed to the membership of the Association and there have been numerous additional requests for it. Another bulletin will be published during the coming year describing methods of white water utilization in some detail.

An extensive research or demonstration in white water utilization in a fine writing paper mill is in progress. The results of this investigation to date indicate the practicability of developing a closed or substantally closed system in this branch of the industry. A definite report will be submitted at the conclusion of this work which, however, will require several months in order to carry through a summer period when more critical conditions regarding slime and other difficulties are encountered.

There are two important steps in the development of white water utilization; first, the equipment, piping, tanks, etc., necessary for its recirculation and re-use; second, its application in the mill. The first is relatively simple, and several practical and economical methods have been developed. The second step requires study and development. The installation of equipment cannot be completed one day and successfully placed in operation the next. Adjustments will have to be made in the process to compensate for the paper-making material formerly wasted but now returned into the system. The personnel must be trained in the operation of the new system. The final results, however, will well repay for all efforts and money expended.

The Engineering Department is in better position than ever to render special and efficient service in white water utilization to the Association's membership. That this is a problem of substantial economic importance, is conclusively demonstrated by the results obtained in the mills visited during the past year and referred to above.

State Activities

The cooperative activities with the officials in the various states regarding stream improvement have been continued with marked success. The effect of previous organization in this activity is quite evident. With few exceptions the tendency now is wholly toward rational legislation and the development of cooperative programs.

The outstanding state activity has been the cooperative sanitary survey in the principal streams of Maine, which was sponsored, developed and financed by the pulp and paper mills of the state. The Engineer of the Association assisted the local committee in organizing the personnel and details of the survey. Furthermore, he visited these states on several different occasions during the progress of the work, and consulted with those in direct charge.

The results of this survey have been very gratifying. The condition of the streams was much better than anticipated, although the effect of pollution by pulp and paper mill wastes was evident. The industry is now definitely in position to answer the general and somewhat traditional criticisms that have been directed at it in the past, and to initiate corrective measures where and when needed. Furthermore, the work has done much to harmonize the rather antagonistic attitude prevailing among certain factions of the state. A complete report is being prepared by the Maine committee for publication.

The survey was under the direct supervision of Professor C. L. Walker of Cornell University, but was conducted in cooperation with the State Board of Health, and the United States Public Health Service. A new analytical method was developed by the

United States Public Health Service for the determination of dissolved oxygen because of the peculiar effect of sulphite waste liquor upon the generally accepted standard procedure.

The cooperative program in Virginia has been continued, but is being financed entirely from state funds. A survey in January, 1930, showed that the pulp and paper industry of Virginia had spent some $700,000 during the year 1929 to improve stream conditions. This is a development not paralleled in any other state. Virginia has no laws relating to pollution. The improvements were made voluntarily on the part of the mills affected.

Sulphite Waste Liquor

Sulphite waste liquor is still the critical factor in the Association's program to improve stream conditions. One mill has been closed and is being dismantled largely because of difficulties in this respect. Another is now involved in litigation which, if adverse to the mill, may affect the whole industry on the Pacific Coast, and in fact possibly to a considerable extent throughout the Nation. A satisfactory solution of this problem in the near future will be necessary to prevent other mills being drawn into extremely embarrassing situations and litigation.

Methods that have been or are being developed in sulphite waste liquor utilization include the Howard process of differential precipitation, evaporation under pressure or through heat exchange and the Robson process. All but the first of these depend upon evaporation as a preliminary step. It has been reported that some of these methods may be operated economically in certain sections of the country and under certain local conditions. In general however, it is considered that a satisfactory and economical method of sulphite waste liquor utilization is not yet available to the industry.

Litigation

Litigation has been commenced against several mills regarding stream pollution, but in all instances, with one possible exception, by private rather than governmental agencies. A few of these cases have been settled satisfactorily out of court; others are pending. Complaints have alleged danger or injury to human health and comfort, to cattle and other livestock, to fishing and the oyster industry, and to agricultural interests. While in some cases an adverse decision by the court would affect only the one mill, in others a large portion, or even the whole industry might ultimately become similarly involved.

The Engineering Department is in position to assist any mill in litigation regarding stream pollution. Services along this line will be rendered without direct charge to a limited extent where it is believed a large portion of the industry is involved. Otherwise a charge for actual salary and expenses will be rendered to members of the Association and additional charges to others.

Legislation

There will undoubtedly be many bills submitted, in the various state legislatures to control stream pollution during the coming winter, and possibly some in Congress. It is believed that the industry should not oppose, but rather assist in developing rational state legislation. Such legislation should include the following provisions.

1. The establishment of an advisory committee or board representative of the various interests involved, to have complete jurisdiction over all matters relating to stream pollution.

2. The designation of an executive, preferably a representative of the State Department of Health, to head these activities.

3. The duties of the committee and its executive should include:

(a) General administration and enforcement of all laws relating to pollution.

(b) Initiation of research and investigations to determine practical and economical methods for the solution of various problems, with studies conducted under state auspices or in cooperation with industries or other organizations.

(c) Formulation and issuance of general rules and regulations, and such special regulations affecting specific localities, as may be necessary.

(d) arrangements with neighboring states or with the federal government to conduct investigations on interstate streams.

4. A provision that essential data will be furnished by the owner of any plant or establishment.

5. A penalty for non-compliance with orders of the Board.

6. Equity in the adjustment of orders or findings of the administrative board by hearing and re-consideration by the board itself, court review and decision, or arbitration.

7. Adequate appropriation to carry on the work.

It behooves the pulp and paper industry to keep in touch with the situation in each state in order that any legislation may be developed along rational lines.

Industrial Cooperation

Others than the pulp and paper industry are involved in the problem of stream pollution. The pulp and paper industry, however, is the only industry conducting a national program to improve conditions. It frequently happens, therefore, that, in matters of common interest, the pulp and paper industry becomes a representative of other industries involved. Pollution from other industries frequently accentuates conditions in streams on which pulp and paper mills are located, so that mills are sometimes blamed for conditions for which they are not entirely responsible, and, finally, there is at present no central organization through which industry may act as a unit in matters of legislative or public policy.

Some effort has been made to stimulate activities in stream improvement through the trade organizations of other industries but without success. In the interest of all concerned it is desirable that other industries which are factors in stream pollution initiate national programs in stream improvement through their respective trade organizations, and that there be formed a central committee representative of industry as a whole, through which ideas may be exchanged and unified programs regarding legislative and public policies developed. Executives of the pulp and paper industry could doubtless assist materially in organizing such a program.

Future Program

There appears to be no demand nor need for extending activities during the coming year beyond those already undertaken. White water utilization evidently is still the dominating problem requiring an aggressive program. Cooperation with state officials, sportsmen's organizations, and other interests in stream improvement should be continued; all legislation to control stream pollution should be carefully considered and such action taken as appears desirable; mills involved in litigation should be assisted especially when conditions are such that other mills may become involved; and, finally, field work and individual mill contacts should be extended to the fullest extent possible with the available personnel. Efforts should also be continued to interest other industries in developing an aggressive program in stream improvement.

ARBITRATION COMMITTEE REPORT

E. H. Naylor, chairman, reported as follows for the Arbitration Committee:

At the last annual meeting a resolution was adopted directing President Willson to appoint a committee to ascertain what might be done as an association to introduce the principles of commercial arbitration into paper industry, and the groups with which it deals. Pursuant thereto, your committee has conducted an investigation and submits the following facts for your consideration:

What are the advantages of commercial arbitration and what benefits can this modern business practice bring to the paper and pulp industry and to the members of the American Paper and Pulp Association? Probably every member of the Association, at one time or another, has had experience with the law's delays due to congested court calendars and the consequent difficulty of disposing of controversies within a reasonable time. Frequently it requires two or three years to reach a decision.

In the meantime assets may be impounded, commodities tied up and a firm burdened with the worries and costs of long drawn out litigation. And in the end it is sometimes difficult to say to which party the victory belongs.

In arbitration, there is no waiting for a place on a calendar and no delays other than those to which the parties themselves agree. There is no limit to the number of judges, or arbitrators, available, nor to the number of hearings that may be conducted at one time. Business disputes are settled by machinery devised for business men which they themselves can operate, without general recourse to the courts—a particular advantage in the many business disputes which are too technical for the average jury to handle intelligently.

Arbitration is neither compromise nor conciliation, but a method of arriving at a just and equitable decision based solely on the merits of the controversy and having all the effectiveness of a decision of the courts. Unnecessary delays are eliminated, a party's failure to act is guarded against, there can be no substantial lapse in the proceedings and costs are carefully controlled, by properly drawn rules of procedure.

Let us take one or two cases taken from the records of the American Arbitration Association, in considering the advantages of arbitration. An interesting case arising in the paper trade was recently submitted to arbitration, in which three parties were concerned. A dealer in paper manufacturing supplies contracted to purchase from a publisher of several widely circulated magazines the waste paper accumulated in the latter's plant during the course of a year, one of the stipulations of the contract being that the stock purchased would be free of groundwood. Before the termination of the contract a dispute arose between the parties over the quality of the waste paper delivered, the dealer claiming that a certain part of the waste, resulting from the product supplied to the publisher by a particular paper manufacturer, contained groundwood in violation of the terms of the contract. The purchaser refused to remit in full for the invoices of the publisher and claimed an allowance of several thousand dollars on the purchase price.

At this point the manufacturer supplying the publisher with paper entered the case, as his product, although generally recognized as free from groundwood, had been specified as having reduced the value of the white shavings included in the shipments. To protect the reputation of his product he was willing to defend the publisher and hold him free from any loss under the terms of the contract.

The case was submitted to arbitration. The dealer and the publisher each designated an arbitrator and the two thus chosen mutually agreed upon a third from the National Panel of the American Arbitration Association, and a date was set for the hearing, which was held in the Association's Tribunal of Arbitration in New York City. Evidence of experts in the trade and chemical analyses of the stock in question were submitted. After hearing all testimony the arbitrators decided that although these analyses indicated a small percentage of groundwood, the stock according to trade standards and customs was commercially free of groundwood, and an award was rendered in favor of the publishers. The case was disposed of within ten days of its submission to arbitration, the actual hearing lasting about three hours.

The benefits derived from the use of arbitration in disposing of this and similar cases might be briefly summed up as follows: First, there was the saving of time and money. The fee charged by the Association covers only the actual expenses incurred in the hearing and, based on its schedule of fees, each party to a controversy in which the amount involved is from $1,000 to $10,000 pays a fee of $25.00, and the case cited above came within this limit. Another item in saving is the promptness with which merchandise under dispute is freed by a quick settlement of the controversy, as are cash resources and other assets.

Arbitration hearings are private unless the parties decide otherwise. There is no unpleasant publicity, reflecting upon the credit of the buyer or the reputation of the product of the seller, with consequent damage to the good-will of either party. Proceedings are friendly and informal, and do not close the door to future business transactions between the parties.

Involving questions of fact rather than questions of law, this case was heard and awards rendered by trade experts, especially qualified by experience and knowledge to pass upon the merits of the disputes. And the awards of the arbitrators, under the prevailing arbitration laws, had all the finality and effectiveness of a decision of the courts. But the real measure of the success of arbitration is the extent to which it has been adopted by trade organizations and the place it has found in the activities of trade bodies.

For example, importers of hides and skins had an antiquated system of arbitration which was destroying confidence in the practice. Their differences with tanners were also not adjusted. A new plan was installed for the importers and a joint plan for importers and tanners was adopted and a peaceable method of settling such differences was restored.

In the fur industry, arbitration had fallen into disuse by reason of its many defects. A new system was installed by the American Arbitration Association for the merchants; the fur brokers were brought into a joint agreement, and the purchase and sale of raw skins is now fully protected by arbitration. And recently, the Wool Institute, with the cooperation of the American Arbitration Association, adopted a comprehensive plan of arbitration embracing the entire industry and the system is now operating effectively.

There are several ways in which trade associations participate in the National System of the American Arbitration Association. One group, instead of establishing its own machinery, may include in its standard contract forms an arbitration clause designating the facilities of the Association for the settlement of disputes. Another group may enter into a cooperative arrangement with the Association, under which members are urged to include the Association's standard arbitration clause in all contracts, thus making available the facilities of the Association in all disputes in which members become involved.

In other cases, organizations have established their own machinery and operate it under the supervision of the Association; or they have established joint rules and facilities wherein the trade body and the Arbitration Association perform complementary functions; while in other cases organizations have installed independent machinery in harmony with the practice established by the Association and wherein it has an advisory or consulting relationship to the trade body. Organizations which have arbitration machinery operating under one of these methods include the Actors Equity Association, American Fur Merchants Association, Automobile Merchants Association of New York, Fur Brokers Association of New York, Institute of Scrap Iron and Steel, Jute and Gunnies Importers Association, Laundry Board of Trade, National Association of Amusement Parks, National Association of Importers of Hides & Skins and the Tanners Council of America, New York Building Congress, Philadelphia Building Congress, Society of American Florists and Ornamental Horticulturists and the Wool Institute. Still other organizations, including some of the pioneers in arbitration, have entirely independent systems designed to fit the needs of particular industries, such as the Silk Association of America, National Confectioners Association, American Spice Trade Association, National Association of Grain and Feed Dealers, National Hay Association, National Association of Waste Material Dealers and the National Boot & Shoe Manufacturers Association, to name but a few of them.

Led by New York in 1920, ten states have passed effective and comprehensive arbitration laws, which make valid and irrevocable an agreement to arbitrate a future as well as an existing con-

troversy. The additional states are New Jersey, California, Pennsylvania, Massachusetts, Connecticut, New Hampshire, Rhode Island, Louisiana and Arizona. A similar arbitration act was passed by Congress in 1925, applying to inter-state commerce and maritime transactions. Under the laws of these states, neither party to an arbitration agreement, whether it be for an existing or a future dispute, is permitted to revoke his agreement. If a party refuses or neglects to arbitrate, the appropriate court will order the arbitration to proceed, and if he undertakes to litigate, the appropriate court will stay any suit or proceeding brought in violation of the arbitration agreement. Under the law and with carefully drawn rules or procedure there can be no deadlock or delay in the arbitration proceeding.

The law further expedites proceedings by empowering the arbitrators to summon witnesses and order the production of books and papers and other evidence necessary to a complete hearing of the case. And under the law an award is enforceable; for whenever a party refuses to comply with or perform an award, the court is required to confirm the award and to enter judgment thereon, unless there is proof of misconduct or bias by the arbitrator or unless he has exceeded his authority. Thus the award is final as to the merits of the controversy, for the court cannot review the facts nor render a new decision; it can only determine whether the procedure has been held in accordance with the requirements of the law.

In practically all of the remaining thirty-eight states some form of arbitration law now exists, which upholds a properly executed agreement to arbitrate an existing dispute but under which an arbitration clause or an agreement to arbitrate a future dispute is not valid. In several of these states during the coming year a modern arbitration act, similar to those already in force and in harmony with the Federal law, will be introduced into the legislature.

President Hoover, Justice Hughes and hundreds of representative men have endorsed commercial arbitration. It is operating successfully in scores of associations, and may be considered a proven and established method of adjudicating all forms of claims and disputes arising in the conduct of business. If it is now the pleasure of the American Paper and Pulp Association to take this matter up with such organization as the National Paper Trade Association, Association of American Wood Pulp Importers, National Association of Waste Material Dealers, and other similar organizations, this next step can be taken. There is, of course, the question of policy as to whether the actual operation of an arbitration plan should be undertaken by the grade associations or the national association.

COST DEPARTMENT REPORT

Thomas J. Burke, manager of the cost department submitted the following annual report:

On April 15, 1930, the work being carried on by the Cost Association of the paper industry was again taken over by the American Paper and Pulp Association. The necessity for this activity had been recognized by the parent association in 1916 and for two years some work was done along these lines through a Cost Section.

In 1918, however, mainly because of lack of funds, the Cost Section was discontinued. It was then that the Cost Association of the Paper Industry was organized as a separate association and for 12 years carried forward the work with the support of approximately 100 mills, whose executives realized the fundamental necessity for an industry-wide educational effort of this nature.

In its Constitution the objectives of the Cost Association were stated to be:

1—To provide means for the interchange of ideas among its members, regarding costs, including financial statistics and efficiency study.

2—To promote cooperation with a view to simplifying methods and standardizing practice in accounting and cost procedure.

3—To stimulate interest incidentally by advising with other manufacturers and converters when requested.

They remain the fundamental objectives of the Cost Department.

The Cost Committee also believes that one important objective is to reach those mills whose executives have not a full appreciation of the value of correct accounting and cost procedure, and to enlist their cooperation.

One method used to interest all mills in the work has been the publication of a monthly Journal *Pulp and Paper Profits*. This Journal was first published in April, 1924, and since that date has been published regularly each month, over 800 copies being mailed to every mill in the United States as well as to many converters.

It has materially assisted in convincing a number of mill executives and accountants of the benefits to be derived from cooperative work of this nature, also in forming contacts with non-members. As a result a number of these have later become strong supporters of this activity.

In 1922 arrangements were made with the PAPER TRADE JOURNAL to publish a Cost Section weekly. This has appeared regularly since that time and has also been productive of a number of inquiries about the work.

The Cost Association started local divisions in different paper-making centers for the purpose of encouraging the accountants to meet regularly to discuss their mutual problems, particularly during the period intervening between the regular semi-annual conventions. Papers were read and discussions followed and in this way a great impetus has been given to cost work in the industry. At present three of these divisions, viz., Massachusetts, Michigan and Wisconsin, hold regular monthly meetings during the winter months and the committee urges member mills to encourage their accountants to attend these meetings.

Semi-annual conventions have been held since the Cost Association was organized and every phase of the work done in the accounting departments of the mills has been covered at these conventions. Non-member mills have always been invited to send representatives to these meetings and a number of them have availed themselves of this privilege. As a result many of them have expressed their appreciation and their intention to make changes in their accounting procedure.

The director of the department usually spends about two months of the year visiting as many mills as possible with the funds available for traveling. Also, he usually attends at least one of the meetings in each local division and thus keeps in close personal contact with the accounting and cost problems of the industry.

The department maintains an employment file for the use of executives seeking capable accountants with experience in the industry, also for accountants seeking employment. It should be noted, however, that an accountant employed by a member mill desiring to place his name on file should obtain a letter from his executive authorizing the director to do this. During the year several members have secured capable, experienced pulp and paper accoutants through the Bureau. The committee believes this is a service that can be extended and suggests that member mills when requiring accountants should communicate with the director. Several capable men are now available.

On October 1st, 1921, the Cost Association published and copyrighted "A Budget Cost System for Paper Mills." Five hundred copies of this publication were distributed in the industry, also to public accountants engaged in doing work for the industry. It contained a list of those things considered fundamental to the operation of a good cost plan and proved beneficial in bringing about greater uniformity in the accounting and cost methods used by the mills. The time has now arrived, however, for the compilation of a much more complete and up-to-date Cost Manual.

Recognizing this need, President S. L. Willson decided to call a special meeting "to consider organizing for the purpose of adopting uniform accounting and cost procedure for the Pulp and Paper Industry." This meeting was held in Buffalo, N. Y., on November 20th and 21st last year, when a special committee, under the chairmanship of James A. Reilly, Assistant Comptroller of the American Writing Paper Co., Inc., was organized to carry out this purpose.

This committee and a number of sub-committees set to work immediately and a good start was made on a difficult undertaking. Undoubtedly such an undertaking will take considerable time and work, although it is hoped that our members will fully realize the value of this work and by their cooperation, assist in its completion at as early a date as possible. It is the purpose of the cost committee to issue a Cost manual for the industry eventually covering all phases of accounting and cost procedure. The Cost Committee believes the general adoption of a uniform cost plan by the industry, will have a beneficial effect in stabilizing prices.

An exhaustive analysis of the industry's Federal Tax Returns for 1928, published last month by the U. S. Treasury Department, has been made by the director and copies have been sent to all members under the title of "What Price Prosperity in the Pulp and Paper Industry." A careful reading of this article, will disclose the fact that a third of the corporations in the industry, on the average, are operating on a very weak financial basis. As the director states, this is a matter of serious concern to us all. It materially affects the work of the department, because we cannot realize the full benefits to be derived from the general adoption of sound accounting and cost methods by the industry, while competition must be met from concerns operating on such a small capital, that their sales policies must be largely influenced by their need of funds, to meet constantly pressing liabilities. Unfortunately, it seems, many of them can get credit to an extent enabling them to carry on business, much longer than should be possible or is beneficial either to themselves or the industry. The committee, therefore, asks the cooperation of members in the development of financial and operating ratios, which it believes would prove beneficial in correcting the conditions, to which attention has been drawn.

The committee suggests that the executives of member mills advise the officers in charge of their accounting departments that the director of the cost department will be glad to act in an advisory capacity whenever it is felt he can be of service to them. If necessary, he will make special trips to member mills for this purpose, whenever time permits. A number of members have made use of this general service rendered by the department during the past year.

Several years ago, the Bureau of Internal Revenue instituted a compaign to standardize depreciation rates. Their representative attended two conventions arranged by the Cost Association and full accounts of his addresses and the following discussions were published in *Pulp and Paper Profits.* As a result, the committee decided that the establishment of standardized depreciation rates in the Pulp and Paper Industry was impracticable for several important reasons, among which might be mentioned the fact that the use of such rates would necessitate the use of a uniform method throughout the industry of accounting for Fixed Assets (Land, Buildings, Machinery, etc.) also in accounting for maintenance and replacement expenses etc. Since such a uniform method was not in use, it was felt that much harm might result to individual mills if the Bureau persisted in its campaign.

The Director was instructed to go to Washington and take the matter up with the Bureau. He had several interviews with the Deputy Commissioner, who stated he was glad to receive the viewpoint of the industry. The matter was also taken up with the accounting bureaus of other industries and the suggestion made that they should also communicate with the Bureau, pointing out the inequities that would result from the establishment of uniform depreciation rates by the Bureau, to be used by industries in compiling their Federal tax returns.

For once a year or more, the Bureau has been considering the matter and finally recently (January, 1931), has issued a preliminary report on "Depreciation Studies." In its "foreword" to this report the Bureau states:—"The use of the rates of depreciation based on the probable useful life of the various assets shown hereafter is not prescribed in any particular case, *and employees of the Bureau, as well as taxpayers, are cautioned against applying them arbitrarily.* They are set forth solely as a guide or starting point from which correct rates may be determined in the light of the experience of the property under consideration and all other pertinent evidence."

The "Foreword" also states:—"In the determination of the depreciation allowances in each case, due consideration should be given the maintenance and replacement policy of the taxpayer and the accounting practice regarding the same." The report contains a list of depreciation rates for "Pulp and Paper and Paper Board" mills, many of which are in accord with the list of rates compiled by the Committee on Depreciation of the Cost Association, a copy of which was supplied to the Bureau.

Copies of this report have been ordered and will be forwarded to members immediately when received. They will undoubtedly be available for use prior to the compilation of tax returns for 1930. The committee recommends members to carefully study the report and to forward any comments or suggestions they wish to make regarding it to the director.

"Depreciation" is an important cost factor in our industry, figures for the last year available (1928) show that the total amount charged off for depreciation in Federal tax returns that year was $62,700,000. The committee believes, therefore, it is a subject worthy of careful study.

Extracts were made from the Federal Trade Commission's report on cost work in open price trade associations and copies have been forwarded to members. In this connection, the committee wishes to stress the fact that, as in all activities carried on by the American Paper and Pulp Association, the work of the Cost Department is conducted in strict accordance with the rulings of the Federal Trade Commission and other Governmental departments.

PULPWOOD DEPARTMENT

Charles W. Boyce, secretary, presented the following annual report for the Pulpwood Department:

In 1930 the word, "pulpwood" appeared on the front page of American newspapers more frequently than ever before, for in it centered international complications. Had there been no extraordinary connotations, it might well have deserved as much space. Today greater significances and greater plays of dynamic forces are implied in the word than ever before.

Pulpwood is the crux of revolutionary shifts that are rapidly changing the complexion not only of the domestic industry but of the world industry as well. Under the pressure of the most intense competition that has ever existed, under a pressure nearly as severe resulting from the application in new mills of much from the growing store of technical knowledge, the attention of all producers are focused anew upon the conditions of pulpwood use in different countries and in different regions in the United States. The year 1930 will mark a new culmination of American genius in pulp making and the rise of a new power in the world pulp trade. Investigating these changes and reporting them in "Pulpwood" has been the chief 1930 contribution to the industry from the Pulpwood Department.

In 1929 a series of regional surveys of pulpwood conditions was organized in the Pulpwood Department, which were carried out by committees composed of outstanding authorities. The reports of these committees at the 1930 annual meeting showed clearly the need for similar, supplementary information on conditions in countries that supply the United States with pulpwood,

woodpulp and paper. Moreover, early in 1930 signs of abnormal stress appeared in both paper and pulp markets, portending the approach of marketing difficulties. When prices shifted and later plunged in chaotic disorder, when stocks began to pile up and production was halted by sheer inability to sell or to store more pulp, the importance of thorough study could not be denied. It was undertaken in a systematic manner and as completely objective as possible. It sought not the facts by which the industry could be glorified, but all the facts concerning pulpwood use whether they were pleasing or not. These have been reported as they were compiled.

The first step in the study was to ascertain the condition of dependency of American paper consumption upon domestic and imported materials. Calculations based upon analyses of import statistics were made, which permitted the extension to date of the trends originally determined by the Forest Service Study of 1922, published under the title of "How the U. S. Can Meet Its Present and Future Pulpwood Requirements." The extension showed that the condition of rapidly growing dependence upon imports, apparent in 1922, had slowed down, in fact there were evidences of trend reversals in the preliminary calculations based upon the 1929 statistics. Later figures did not bear this out, but they did show a remarkable increase in domestic manufacture of pulp from American cut wood. This increase centered in the South and in the West.

A world study of woodpulp production followed. This investigation, the first of its kind ever made, revealed the unhealthy condition of the world industry that later precipitated international price wars and cut throat competition; it showed that the expected increases in American pulp consumption had been anticipated by new mill construction not only in the United States itself, but in Sweden and Finland as well. In 1929 this new capacity came in. The duplication prevented full operation in the industry, except in especially favored plants, and it added greater pressure to the crushing burdens that fell when the 1930 gloom wiped away the supports of normal business.

These studies under progress, the Department undertook the next logical step: the study of foreign forest conditions in an attempt to determine what competitive production might be expected in the future. Much information on forest conditions in Norway, Sweden, Finland and Russia was compiled and published in "Pulpwood." No conclusions on the extent of future competition or its character were attempted, nor will they be until conditions in other important pulp producing countries have been investigated.

The resource studies have shown, however, that throughout the world heavy liquidation of timber is under way and that either the desire to liquidate or to make more profitable the normal liquidation by integrating lumber and pulp production, underlies most expansion in the pulp industry. The tremendous rise in use of sulphate pulp has stimulated integration in northern Europe where production increased nearly one half million tons in 1929 alone. This, combined with substantial increases in self-contained kraft paper mills in Southern United States, making use of round wood purchased from local farmers at prices that represent only a labor return, contributed much to the instability in the industry. Furthermore, the abnormally large supplies of sulphate pulp available at record-breaking low prices, attracted demand from former sulphite users, which toppled a fast-weakening market structure in sulphite pulp into a parallel plunge.

Under such conditions wood prices naturally weakened in the high price regions both in the United States and in Europe. The American price structure was also affected by overcutting in Canada, and world wood prices were further softened by increased exports of Russian wood, the total amounting to 1,500,000 cords in 1929, of which 235,000 cords came to the United States.

These conditions were reported in "Pulpwood" as they occurred. In the reporting the Department maintained a strictly objective viewpoint. At the same time it was mindful that with the technical progress in pulping with the improvement of means of transportation, and with shifts in population, the industry is tending toward a wider and more equal geographic distribution. Interpretation of events, particularly the imports of Russian wood have been made in the light of these and other facts.

The Department has assembled the necessary statistical data for the next study in the series: the consumption of pulp in the world and the determination of trends in woodpulp trade and their effect upon both American purchasers and producers. This will be published as a special association bulletin in 1931.

During the year the usual quarterly surveys of pulpwood prices were made and summarized. A new plan of preliminary reports is being tried out in order that the companies that report within the first month of the quarter may benefit from their promptness.

Activities in forestry were somewhat curtailed this year to permit more concentrated study of the economic phases of pulpwood use. Even so, however, the Director of the Department spent a month in the Lake States, visiting mills, helping company foresters in outlining forest management plans, and advising concerning the practicality of company operations. From this trip and from correspondence with mills in other regions, it is apparent that interest in pulpwood management is being sustained. The regional studies of pulpwood conditions did much to focus attention not only of foresters but also of executives of self-contained mills as well upon the competitive aspect of pulpwood use and upon the fact that forestry is a part of this competition. This was discussed in "Pulpwood" in connection with a summary of pulpwood conditions in the Lake States and in a special paper entitled, "The Forest Problem of the United States", published in a trade journal.

A report covering the southeastern region was not presented in the regional pulpwood surveys in 1930. The Department has undertaken the preparation of this report, drawing heavily from the experience of authorities fully acquainted with southern conditions. A comparative summary of all the reports is planned as a means of getting before the executives in the industry the outstanding conclusions that were reached.

The advantages of a central association representing the industry as a whole are amply evidenced in the excellent cooperation from members, the other association departments and from affiliated organizations which the Department received during the year. It could reach out to all sources of information, tapping well developed contacts made possible by the type of organization. R. S. Kellogg, Secretary, News Print Service Bureau and O. M. Porter, Manager, National Kraft Paper Manufacturers Association especially contributed helpful advice.

STATISTICAL DEPARTMENT REPORT

J. A. Kavanagh, director, presented the following annual report for the Statistical Department:

Although the paper industry enjoyed a somewhat higher level of activity than most other major industries, it was nevertheless affected by the business depression of 1930. Most of its troubles, however, were primarily due to the factors which had begun to make themselves felt in some sections of the paper industry as early as 1928 and 1929, years which enjoyed the reputation of "good business."

The paper industry entered 1930 with several serious problems on its hands. Markets were narrowing; there was a shifting of grades on the part of manufacturers; prices were on the downgrade; new competition was developing between grades; the industry was witnessing continued regional growths on the West Coast and in the Southern states; foreign production of pulp was increasing and there was evidence of a serious oversupply of pulp and paper.

These factors added to the unfavorable trend of business caused unsettled market conditions in several groups of the industry, and a narrowing or elimination of profit margins.

A survey is being undertaken by the Statistical Department

to determine whether or not an abnormal inventory situation exists among the purchasers of kraft, bleached and unbleached sulphite pulp, and also to determine what the source of this excess is (West Coast, Canada, Overseas and Other). We believe that a knowledge of the true inventory situation will help prevent disturbances in the pulp market.

Most of the industry's difficulties can be eliminated by better cooperation among the various groups and a closer study of underlying conditions. These disorders have impressed the members of the paper industry with the fact that in solving these problems, they must have certain basic facts upon which to make their plans. This has resulted in greater demand on the part of the manufacturers for statistical and economic data from the national organization of the industry.

Major economic developments have been followed closely and the problems pointed out from time to time as certain situations arose, both in the paper industry and in general business, in the *Weekly Business Review* published by the Statistical Department. Paper and pulp manufacturers in the past year have come to the Association to a greater extent than ever before, with requests for specific information which would help them in planning their operations. Group associations whose statistics are handled through the Statistical Department, requested and obtained a greater amount of specific information than has been available heretofore for these groups.

The Glassine and Insulating Board manufacturers requested the development of statistical services in order that they might have current data on the trend of operations as a help in stabilizing operations in their sections of the industry. Their needs were analyzed and as much data as were possible at the time were developed, just as was previously done by the Statistical Department in the case of the National Kraft Paper Manufacturers Association, National Sulphite Paper Manufacturers Association and the Wall Paper Manufacturers Association, as well as other smaller groups. The Department is so organized that its staff is well able to handle development work of this kind in addition to its usual routine.

Market data in the paper industry have never been as plentiful as they should, considering the fact that the paper industry is a mass-production industry and requires successful mass-distribution in order to make even a small profit. Competition has reached an acute state and profits have resulted in many instances only from the fact that some manufacturers have been fortunate enough to lower their costs faster than prices declined. Serious losses occur in getting the goods to market and lower distribution costs are necessary if any profits are to be made. In order that market surveys might be developed which would materially assist in reducing costs, the Statistical Department has cooperated closely with the Bureau of the Census in the development of basic data gathered through the new Census of Distribution, the result of which will be published about the middle of 1931. The Census itself is not a market survey but is designed to furnish the framework upon which a sound and valuable market survey can be constructed. From that point on, industry must help itself.

When there is more paper on a given market than the consumers need, the obvious result is price weakness. Certain grades of paper are not affected until some time after a slump in general business has set in. Serious damage can be done to those markets if the industry operates without regard to the probability of such a decline. The Statistical Department prepared and distributed charts and an analysis of a lack of balance which developed rather suddenly in one of the major divisions of the paper industry and warned all the mills in that division, both members and non-members of the American Paper and Pulp Association. This situation has since improved but it is always harder to repair the damage than to prevent it.

The paper industry's operations do not fluctuate as sharply as is the case in most other major industries but ordinarily maintain a rather stable level. Employment likewise is not subject to so much fluctuation. Though this is true, the paper industry and its profits are affected to some extent by changes in the trend of general business. It requires a great deal of selected reading to keep in touch with important current conditions and it is an almost impossible task for any executive to do this in addition to his own work. To fill a very definite need for a brief, accurate summarization of general business, paper and pulp, raw materials and general matters of policy, the Statistical Department publishes the *Weekly Business Review* and has continued in its effort to make it of more value to the executives of the paper industry.

Every executive is interested primarily in his own section of the paper business, but conditions are so inter-related that it is also necessary to consider the trends throughout the industry. Each month, in the *Monthly Statistical Summary*, a cross-section of the pulp and paper industry operators is presented, in order that any of our members or cooperating organizations can readily follow the trends in the major grades of pulp and paper. This summary is one of the few association publications which covers its entire industry so completely. For some sections of the pulp and paper industry, it contains the only current information available. In compiling the data for the *Monthly Statistical Summary*, we have the whole-hearted cooperation of the Cover Paper Manufacturers Association, National Kraft Paper Manufacturers Association, National Sulphite Paper Manufacturers Association, News Print Service Bureau, Paperboard Industries Association, and the Writing Paper Manufacturers Association.

These has been considerable shifting of markets and of production from one section of the country to another. New pulp developments in the South and on the West Coast have caused serious unsettlement in the industry. The Statistical Department has developed data on a monthly basis showing the regional trend in pulp operations by grades.

There are groups whose mills are not members of any association and only with great difficulty can data be gathered on these sections. In order that they might have at least annual data on their operations the Statistical Department has cooperated closely with the Bureau of the Census in developing more comprehensive census reports for these sections of the industry.

Statistics have a greater value when they are available over a long period of time. The present success of the older group association is due, to a great extent, to the fact that they have reliable data covering a great many years enabling them to point out the lessons of the past and avoid recurrence of unsatisfactory conditions. With this in mind, the Statistical Department has been compiling material from various scattered sources, both foreign and domestic, in order that the American Paper and Pulp Association might be the central source of these miscellaneous foreign and domestic data.

In accordance with the suggestion of last year's committee, S. L. Willson, president of the American Paper and Pulp Association has appointed a new Committee on Statistics, composed of mill and association executives, to assist in the development of policies and to give direction and balance to the work of the Statistical Department.

During the coming year, the Statistical Department, with the cooperation and guidance of the Committee on Statistics, plans in addition to its present work, to further develop the regional operating data for the pulp industry; secure more complete and detailed data for both the paper and pulp industry; develop basic data for use in market research, distribution quotas, etc.; continue to gather all possible data on foreign pulp and paper operations which affect the domestic market; and effect closer cooperation with individual mills in use of data developed by the Statistical Department.

TARIFF COMMITTEE

M. E. Marcuse of the Bedford Pulp and Paper Company, chairman, presented the following report for the tariff committee:

Since the report of your Tariff Committee to the Association convention a year ago, a new tariff act has been enacted and a report made to the membership, giving in detail the changes effected in rates. It is therefore not necessary to review the details of the Tariff Act of 1930, effective June 18, 1930, but it is quite in place to point out a few facts as to the manner in which the new law has affected the industry, both as to rates and as to classifications.

Rate changes in themselves were made in nearly every grade where revision was required. Of far greater importance, however, has been the effect through clarification of language, the elimination of ambiguities and the addition of precise definitions. In many cases these changes have been effective in securing a radical revision of the duty on certain grades. Customs practice is simplified, and the enforcement of the law as to paper relieved of many technicalities which involved evasion of its intent by importers.

The paper industry is to be congratulated on its vision in its method of seeking tariff changes. Without being involved in the political squabbles which marked so many schedules of the tariff bill, the paper industry was able to secure practically every important change which it desired. There was no lobbying, no criticism of its method of approach to a difficult problem.

It may be stated that the paper industry was more successful in its efforts to secure needed changes in the law than any other major industry, and for the chief reason that the vision of the industry was more far-seeing than that of other groups.

It was realized at the outset that the writing of the Tariff Act of 1930 was to see an effort to approach the scientific making of a tariff law. Some other industries did not carry out this ideal, but the paper industry stood steadfast in its appeal for a tariff law whose rates could be justified by facts, and by facts only, in computing the rates needed to give the domestic mill an equal chance with his foreign competitor for his home market. This determination to seek a scientific tariff has undoubtedly led the way for other industries in future tariff revisions.

The campaign of the paper industry has therefore set a precedent in tariff writing. The cost of the campaign was probably far less than that of other industries, and more effective.

It is proper in this connection to again refer, as was done a year ago, to the method followed. Fortunate in having its Import Committee of the American Paper Industry, charged with enforcement of existing laws yet equipped with detailed knowledge of competitive conditions, our Committee utilized this data, not possessed by other industries, to justify every request made for an advance in rates, or a change of language. Our regular legal counsel, Wise, Whitney and Parker, counsel also for the Import Committee, was retained by your Tariff Committee and it was then able to present its factual data under experienced and effectual guidance.

The result was that the leaders in Congress charged with writing the new law were in the position of having responsible agencies able to provide specific facts to guide in making proper adjustments of the rates, instead of as in the case of too many other industries, of being faced with lobbyists and others who were seeking to use political methods to secure rates which lacked facts for justification.

Your committee has announced that it will be responsible for the handling of cases under the flexible tariff provisions of the law before the United States Tariff Commission. One such case has arisen, and been decided favorably to the industry. This was the investigation of cigarette paper, inspired with a view to a reduction in the present rate of duty. Your committee, faced with a Tariff Commission hearing, again utilized the experience of the Import Committee and its counsel, Wise, Whitney and Parker, with the result that the importing interests, faced with the data at the command of the industry through these sources, secured the withdrawal of the Senate resolution calling for the investigation, and the duty remains unchanged.

Our cooperation from the entire industry was so generous that it is difficult to single out any particular person, but the committee believes special mention should be made of the able assistance rendered by S. L. Willson and D. C. Everest. Special tribute should also be paid to Warren B. Bullock of the Import Committee. These men are deserving of the thanks of the industry.

The Headquarter's Staff of the American Paper and Pulp Association was continuously on duty, not only handling the tasks assigned to them, but more often anticipating our requirements, and from them came many helpful suggestions.

PULPWOOD DEPARTMENT MEETINGS

Charles W. Boyce, secretary, presented his annual report at the meeting of the Pulpwood Department of the American Paper and Pulp Association on Tuesday morning at the Hotel Pennsylvania. Following the report, which was very comprehensive, and was well received by those present, the following addresses were given:

"Cooperation in Fire Fighting," by C. R. Tillotson, United States Forest Service. "Forest Fire Protection Agencies and Equipment," by F. G. Kilp, Nekoosa-Edwards Paper Company, Inc., representing the Lake States; J. K. Johnson, Bogalusa Paper Company, representing the South; and Herman Grossman, Crown Willamette Paper Company, representing the Pacific Coast. "Logging Technique Investigations," by A. Koroleff, Canadian Pulp and Paper Association. "Notes on Girdling," by M. Westveld, Northeastern Forest Experiment Station. "Tractor Logging" (With Movies), by James H. Howell, Caterpillar Tractor Company. "Pulpwood Handling" (With Movies), Howard Barbour, The Thew Shovel Company, and Finch, Pruyn and Company, Inc., operations in Movies.

Vehement denial was made that pulpwood shipped from Soviet Russia is produced by convict labor by M. S. Makodsub, of the Amtorg Trading Corporation, at the meeting of the Pulpwood Department, Tuesday afternoon. He said:

"We respect the laws of the country where we operate and inasmuch as the United States forbids the importation of pulpwood made with convict labor we use no such labor in the production of the wood we send to this country. They ask us to prove that this wood is not produced by convict labor. What proof have you in this country that it is so produced? All the statements so far made are by anonymous informers identified as refugees from Russia, most of them coming from the neighborhood of Helsingfors in Switzerland which is close to the province of Karelia where approximately no pulpwood is produced.

"Finland has been losing its markets for lumber and Russia has been gaining. This may explain the source of these charges against the manner in which our exports are produced. Much of our pulpwood is exported to European countries, which in turn manufacture pulp and paper for shipment to the United States. Let me point out that if pulpwood, said to be produced by convict labor, is excluded from the United States, the finished product from other countries from such wood is not subject to the same embargo.

"Last year we exported to the United States 240,000 cords of high grade pulpwood equal in quality to Canada's spruce at prices materially below those charged by Canada. This, however, is only a portion of our total exports. In 1930 we exported over 1,300,000 cords of which Germany received 50 per cent, and other European countries a balance which was not shipped to the United States.

"Before the war the exports totaled 700,000 cords or about half of last year's exportation. Meanwhile, however, the production of lumber is just beginning to approximate the pre-war figure. Other countries which have been exporting pulpwood have ex-

perienced a decline in their importations since wood from Soviet Russia approached a large total. Poland in 1913 exported about 400,000 cords and in 1929 was somewhat under 900,000. In 1930 its exports were 482,000 cords.

"Finland and Czechoslovakia showed a similar increase in production from pre-war period until two or three years ago and then a steady reduction. They could not ship both wood and paper so reduced the export of wood. The question was raised as to forced labor. We must remember that Russian economic conditions are different from those of America. The labor in pulpwood cutting is chiefly peasants used in the time of year when farming is impossible. We have a habit in Russia that 'he who does not work may not eat.' That applies to the entire nation so while it apparently is forced labor, in fact it is merely a habit of a people and not enforced labor in the usual sense of the word."

George N. Ostrander, Finch, Pruyn & Company, Inc., C. O. Brown, International Paper Company, Major Francis Kiefer, Canadian Forwarding Company, Ltd., Allen Abrams, Marathon Paper Mills Company, and Ossian Anderson, Pudget Sound Pulp and Timber Company, also spoke.

CENTRAL RESEARCH COMMITTEE

R. G. Macdonald, chairman, reported as follows for the Central Research Committee:—

At our last annual meeting there was a very evident sentiment in favor of a centralized control and direction of paper research work as the next best plan in the absence of a central research laboratory. Following out this idea, the Executive Committee of the American Paper and Pulp Association authorized the appointment of the following committee: Chairman, Ernst Mahler, Kimberly-Clark Corporation, Neenah, Wis.; Rex W. Hovey, Oxford Paper Company, New York City; R. H. Stevens, Bogalusa Paper Company, Bogalusa, La.; W. G. MacNaughton, International Paper Company, New York City; Helen U. Kiely, American Writing Paper Company, Holyoke, Mass.; R. G. Macdonald, Technical Association, New York City; M. A. Krimmel, Hammermill Paper Company, Erie, Pa.

For the first year the Committee decided to focus its study upon the governmental research agencies, although not losing sight of the need and opportunity for the eventual coordination of paper research in educational institutions and individual companies.

The first meeting was held in Washington with the officials of the Bureau of Standards, where W. E. Emley and B. W. Scribner of the Bureau laid before the Committee all of the projects now in process or to be undertaken, including activities associated with the Bureau of Plants and Soils, the Government Printing Office, the Lithographic Technical Foundation, the National Research Council and the Bureau of Efficiency and Printing.

Later another meeting was held with the members of the staff of the Forest Products Laboratory, Madison, Wis., to which the American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry are contributing a fellowship fund of $5,000 a year for three years. Incidentally, the Committee was fully convinced of the wisdom and the benefit of this contribution.

At Madison the Committee studied particularly the work being done in developing new pulping processes not only of woods commonly used but also the researches which if successful will greatly enlarge the field of raw materials for paper making.

From Madison the committee went to Appleton, Wis., to inspect the Institute of Paper Chemistry which is under the able guidance of Dr. Otto Kress. The Institute is a part of Lawrence College and was organized to provide graduate training to carefully selected students. The committee is of the opinion that the American Paper and Pulp Association should give the Institute the benefit of its approval and endorsement at the next annual meeting of the Association.

Up to this time the committee has devoted its efforts to obtaining a clear grasp of existing governmental facilities as a basis for the formulation of definite suggestions, for the purpose of bringing about the maximum degree of benefit to the industry. The government officials are well disposed towards the plan and have assured the committee of their earnest desire to shape their efforts towards the paramount interests of the paper and pulp industry.

COST DEPARTMENT MEETINGS

The twenty-fifth semi-annual meeting of the Cost Department was marked by excellent attendance and great enthusiasm on the part of those present.

The meeting was held on Tuesday and Wednesday, February 17 and 18, at the Hotel Pennsylvania in New York City, and the opening session began with an address from James A. Reilly, chairman of the Special Committee on Uniform Accounting and Cost Procedure.

Following Mr. Reilly's cordial speech, progress reports were given by the Sub-Committees on Balance Sheets and Chart of Accounts, Profit and Loss Statements, Materials and Labor. With the completion of these the first morning session was adjourned.

The afternoon session continued with additional progress reports on Mill Overhead, Indirect Manufacturing Expense, Administrative and Selling Expenses, Fixed Assets, and Standard Costs. Discussions on the day's program were concluded at a dinner meeting of members of the Cost Committee and the Special Committee on Uniform Accounting Procedure.

That the industry has been making great progress in the reduction of losses by waste was stated by C. M. Baker, Engineer of the American Paper and Pulp Association in his discussion of waste junk by-products at the Wednesday morning meeting of the Cost Association. He said:

"In 1928 it was pointed out that the industry is losing between $6,000,000 and $10,000,000 annually because of ineffective fiber utilization. It was then stated that known processes could recover most of this loss to the financial advantage of the industry.

"The savings now being made by proper utilization of the waste is evidenced by the fact that in one mill making paper board the saving in fiber due to the utilization of white water was $25 per day plus $75 daily in heat units. There was a substantial saving in other chemicals also.

"To secure this saving personnel must be trained in the use of equipment to save what has in the past been a tremendous loss. Cost accountants should be active in showing their associates how such losses can be accurately computed in dollars and thereby spur the industry on to avoid this waste."

Other speeches at the Wednesday morning session of the Association were by C. W. Boyce, of the Pulpwood Department, on the topic of "Fundamentals and Company Policy", and by J. A. C. Kavanagh, of the Statistical Department, on the subject "Looking Backward." These addresses were followed by a general discussion of the ideas contained therein. The Wednesday afternoon session consisted of an open forum in which the work of the Cost Department was thoroughly analyzed and many new thoughts on the subject were introduced for consideration.

SUPPLY AND EQUIPMENT ASSOCIATION

The annual meeting of the Supply and Equipment Section of the American Paper and Pulp Association was held in the East Ballroom of the Hotel Pennsylvania during the noon luncheon period on Wednesday, February 18. During a short business session, W. N. Wilkinson gave a short talk on the advantages to be derived from membership in his association, stressing the fact that the association was an affiliation of the American Paper and Pulp Association. Secretary Charles W. Boyce also addressed the members on the past accomplishments since the association was organized and discussed plans now in process which were expected to be of exceptional benefit to the association as a whole, as well as the members individually.

Two additional Directors were elected during the meeting to serve for the ensuing year, E. H. Neese, vice-president of the Beloit Iron Works, Beloit, Wis., and H. H. Fields, Secretary of the Lindsay Wire Weaving Company, of Cleveland, Ohio.

The speaker of the meeting was Walter Tresckow, assistant vice-president of the Central Hanover Bank and Trust Company, of New York City. His subject was "The Influence of Time on the Human Mind." His talk proved most interesting as he brought into the picture the subject of selling and salesmanship, pointing out that the salesman today must assist his prospect in visualizing the future with optimism, and necessarily had to base his views on recent past accomplishments. He kept strictly away from making any prophesies as to when business would have fully recovered from the past depression.

There were about sixty members of the association present at the meeting.

STANDARDIZATION COMMITTEE REPORT

Protest against the Government as an offender against its own campaign for the standardization of commodities was voiced at the meeting of the Standardization Committee of the American Paper and Pulp Association, Monday afternoon.

After considerable discussion the committee decided to ask the general meeting on Thursday to adopt a resolution asking for conferences with Governmental authorities to secure the standardization of its paper in accordance with the practice being urged by its own Department of Commerce.

The charge was made against the use of a non-standard letter head size and it was pointed out that this has caused great confusion on the part of the manufacturers of writing paper because of the necessity of making special sized paper envelopes, carbon paper, file folders and paper in other forms.

The proposed resolution asks that the authorities of the organization seek a conference with the Joint Committee on Paper and Printing to secure adherence by this purchasing organization of the Government to the Government's own paper standards.

WRITING PAPER MANUFACTURERS

One of the most important meetings during Convention Week was that of the Writing Paper Manufacturers Association, which was held at the Hotel Pennsylvania on Wednesday. Officers elected ofr 1931-1932 were as follows:

President, Col. B. A. Franklin, Strathmore Paper Company.

Vice-President In Charge Rag Division, G. S. Morse, Valley Paper Company.

Vice-President In Charge Sulphite Bond Division, Harrison Baldwin, Hammermill Paper Company.

Secretary-Treasurer, E. H. Naylor.

Members of Executive Committee: Col. B. A. Franklin, G. S. Morse, Harrison Baldwin, A. C. Gilbert, Golbert Paper Company, J. E. Holmes, Chemical Paper Manufacturing Company, Norman Bardeen, Lee Paper Company, and F. A. Leahy, Eastern Manufacturing Company.

COVER PAPER ASSOCIATION

The Cover Paper Manufacturers Association held its 58th annual meeting at the Hotel Pennsylvania last Tuesday. The following officers were elected:

President, J. B. Shepherd, Peninsular Paper Company, Ypsilanti, Mich.

Vice-President, W. H. Howes, Knowlton Brothers Company, Watertown, N. Y.

Secretary-Treasurer, E. H. Naylor, 95 State street, Springfield, Mass.

Members of the Executive Committee: J. B. Shepherd, chairman, W. H. Howes and B. A. Franklin, Strathmore Paper Company, Mittineague, Mass.

SALESMEN'S ASSOCIATION

Reorganization of the Salesmen's Association of the Paper Industry was effected at the annual meeting last Tuesday by an amalgamation of the New York and New England divisions as the Eastern Division; and a similar amalgamation of the Miami Valley and Chicago Division to be known as the Mid-Western Division. The following officers were elected for 1931-1932.

President, Harold R. Knott, Eastern Manufacturing Company, Chicago, Ill.

Vice-President, Eastern Division, Frank H. Purington, Eastern Manufacturing Company, New York.

Vice-President, Mid-Western Division, Creighton Whiting, American Writing Paper Company, Chicago, Ill.

These three, together with chairmen of three standing committees to be named later by President Knott, will comprise the executive committee.

GUMMED INDUSTRIES ASSOCIATION

Members of the Gummed Industries Association met in Parlor A of the Pennsylvania Hotel on Thursday to present suggestions for the furtherance of plans for 1931 and to elect officers. The association re-elected the following officers:

President, W. K. Gerbrick, Central Paper Company, Menasha, Wis.

Vice-President, L. A. Bassett, McLaurin-Jones Company, Brookfield, Mass.

Secretary-Treasurer, Douglass A. Crocker, 370 Lexington Avenue, New York.

Nomination of these officers took place at the morning session and the elections were confirmed at the noon meeting.

TISSUE PAPER ASSOCIATION

At the annual meeting of the Tissue Paper Manufacturers Association, held at the Hotel Pennsylvania on Wednesday morning, the following officers were elected:

President, Austin E. Cofrin, Greenbay, Wis., Fort Howard Paper Co.

Vice-President, M. L. Dinkelspiel, National Paper Products Company, New York City.

Secretary-Treasurer, Herbert Thwaite, New York City.

Members of Executive Committee: Roger W. Bell, A. P. W. Paper Company, Albany, N. Y., and B. F. Picola, Gotham Tissue Paper Corporation, New York City.

AMERICAN WAXED PAPER ASSOCIATION

The American Waxed Paper Association held four conferences of its various divisions during the convention but no election was held as its annual election is held in December of each year. Business conditions were freely discussed by those present and vital problems of the industry were thrashed out.

NATIONAL SULPHITE MEETING

The annual meeting of the National Sulphite Paper Manufacturers Association was held in two sessions, one on Wednesday morning and the other in the afternoon, in the foyer of the Banquet Hall at the Hotel Pennsylvania. General discussion of conditions during the past year took place at both events.

CARDBOARD MANUFACTURERS ASSOCIATION

The annual meeting of the Cardboard Manufacturers Association was held on Wednesday in Exhibit No. 3 at the Hotel Pennsylvania. A large number of members attended and participated in a general discussion of conditions in the industry.

PAPER BAG MANUFACTURERS INSTITUTE

Members of the Paper Bag Manufacturers Institute convened on Wednesday morning at the Hotel Pennsylvania, when matters of interest to the organization were discussed. In the afternoon an open meeting of all paper bag manufacturers was held.

BRISTOL BOARD MANUFACTURERS

An interesting meeting of the Bristol Board Manufacturers was held at the Pennsylvania Hotel on Wednesday. At this event the chief feature was a presentation of business surveys and subsequent comments on varying treatment of new and old problems.

TECHNICAL ASSOCIATION MEETS

Sixteenth Annual Convention of the Technical Association of the Pulp and Paper Industry Is Held at the Pennsylvania Hotel, New York

M. A. Krimmel, of the Hammermill Paper Co., Erie, Pa., Is Reelected President for the Ensuing Year —Association Is Organized on New Divisional Lines With the Field and Function of Each Committee Clearly Defined, Placing Committee Work on a More Efficient Basis—New Members Added in 1930 Were 176, Making the Association Membership 1,166, the Largest in the History of the Organization.

REPRESENTATIVE technical men from all the paper making centers of the United States and Canada attended the sixteenth annual convention of the Technical Association of the Pulp and Paper Industry at the Pennsylvania Hotel in New York, beginning Tuesday and concluding on Thursday. President M. A. Krimmel delivered his annual address as follows:—

President Krimmel's Address

According to our articles of organization, it is the duty of the president to present at the annual meeting an address on subjects which may seem suitable for the occasion. In recent years the duty of reporting for the executive committee has been included; therefore, I shall present first some thoughts on behalf of the executive committee.

Because of the growth in membership, the introduction of new classes of members, the expansion of association activities, and the extension of technical work generally in our Industry, in recent years, it was deemed advisable shortly after our last annual meeting to make a careful analysis of all phases of our association to determine to what extent it is accomplishing its objects. This study of past accomplishments, present activities, and future projects revealed a great deal to which we could point with pride, and which reflects the excellent work done by our predecessors; but it also showed weaknesses in and the necessity for revision of some of the most important phases of our activities in order to meet present requirements, to satisfy the interests of all members, and to provide means for more active participation in the work of the Association by a larger number of members.

Digressing for just a moment from this trend of thought, let us consider the objects and the purposes for our association existence. They should be too well known to justify mention now but the predominating theme is service. Since this is an association composed largely of individual members, it might be well to emphasize the point that in order to place the association in a position to render service to individuals, as well as to corporate and contributing members and to the Industry, the individual members must give service. Generally speaking we get out of an association just about as much as we put into it but it is a function of the officers and members of the executive committee to provide opportunities for individual members to serve.

Committee work has always been recognized as the backbone of our association. Upon investigation of this phase of our activity we found that our committees were not providing for the interests of all of our members. That in many cases the duties of the committees were not clearly defined. That there was considerable duplication of effort. That we did not have a well balanced committee organization. It was evident from replies to roll call questionnaires in which members are asked to designate their chief interests that we have groups interested and actively engaged in the following: Management, Engineering, Raw Material Studies, Operating, Testing, and Research and Development. Therefore, it seemed desirable to base any reorganization plan on these groups.

M. A. KRIMMEL, PRESIDENT

Your executive committee spent two days working together on the committee problem, and the result was the divisional and committee organization which has already been put into operation. It is hardly necessary to spend any time in a lengthy description of it. This was done in a very good article by Secretary Macdonald which appeared in the August 14, 1930 issue of the PAPER TRADE JOURNAL. It has been published in circular form and every TAPPI-ist should become familiar with it. However, the outstanding features are worthy of some emphasis. There is a working organization for each field of interest. Committees are properly classified. The field and

functions of each committee are clearly defined. Committee work is placed on a more efficient basis.

Divisional and committee chairmen were carefully selected with the thought in mind that chairmen of committees should be future divisional chairmen, and that divisional chairmen should be logical candidates for positions on the executive committee so that in this body we would have representatives of the various groups, as well as the different geographical centers. We believe that our annual meetings especially will be favorably affected with this type of organization. Instead of a series of committee meetings there will be divisions, meeting separately or jointly.

Committee reports at meetings will deal primarily with the developments in the respective fields and reports of this sort should add much to the success of the meeting. Programs can be better planned. In this connection the divisional chairmen constitute a committee with the vice-president of the association as chairman to generally supervise the activities of the various divisions and to assist the Secretary in the arrangement of programs for the meetings.

New Charters

At the fall meeting Article Ten on Sections of our Articles of Organization was amended as proposed. Since then a charter has been granted to the Lake States Section with headquarters at Menasha, Wis. A very active group from a well known paper making center is ready to petition for a charter. Interest along this line is active in several other localities. Your executive committee feels that local sections are of great value to the association. They spread TAPPI activities and influence and help to build up membership. Frankly, we would like to see more sections organized and established. The changes in the Articles of Organization were made to encourage the formation of sections on a sound basis but it is not our intention to request organization in any locality. The desire for such a thing and the interest in it must be local.

One of our problems has been to keep our Articles of Organization in pace with the developments of the association. We fully realize that frequent changes in governing laws and policies are not desirable. For this reason we have given careful consideration to the necessity for revision and being satisfied on that point we then gave much thought to a revision which we hope will be adequate for our needs for the next few years at least. We ask your careful study of the proposed changes when they are presented.

International Relations

Your attention has often been called to the fact that technical men from other countries are included in our membership. We value these members and respect the International aspect that they give to our association. That the respect is mutual is evidenced by invitations, received last year, to attend the installation of the Wood Research Institute at the Forestry High School, Eberswalde, Germany, and the twenty-fifth anniversary meeting of Verein der Zellstoff und Papier Chemiker und Ingenieure at Berlin. Unfortunately, we were unable to have a delegate at Eberswalde but the Association was represented at the Berlin meeting by Dr. Bjarne Johnsen.

We realize that it is dangerous to single out any committees for special commendation of their work. Nevertheless, when we consider the work of the Committee on Abstracts and Bibliography, so ably headed by Dr. C. J. West of the National Research Council, some special comment does seem justified and we believe you will approve of this word of appreciation to Dr. West and his associates.

The Chicago Century of Progress Committee, headed by Allen Abrams, will not be fully appreciated for a year or two. This committee has accomplished much working under a handicap and it deserves and needs the support of the American Paper and Pulp Association.

It will no doubt interest many of you to learn that the American Society for Testing Materials, which association enjoys a national as well as international reputation for the development of excellent standards for testing, will form a standing committee for paper. In their communications with us on this subject, A.S.T.M. recognized the very good work which has been done on paper testing by TAPPI and we are confident that our methods will play a very important part in their Committee work. They solicited our approval and support of their program. Your executive committee recommends that we support A.S.T.M. program and assist them in every way possible.

We have received further recognition from A.S.T.M. in the form of a request to have TAPPI represented on their Committee A-10 on iron-chromium, chromium nickel and related alloys. Mr. J. D. Miller, chairman of our Materials of Construction Committee was appointed to this position.

The Optical Society of America through Lloyd A. Jones, president, invited us to send delegates to a preliminary conference to consider the formation of an inter-society committee to deal with the question of color specification. Such requests from other societies are tangible indications of their opinion of our association.

Manual On Standard Testing

Upon the recommendation by L. C. Reynolds, chairman of the Management Methods Committee, we are seriously considering the preparation of a TAPPI manual on standard testing methods and standard practices. It would probably include also articles of organization, policies and regulations governing standing committees, committee organization, local section organization, policies regarding papers for presentation, and procedure at meetings. No doubt the manual would prove very valuable, but would require a great deal of work in its preparation. If it is done, we shall need some good suggestions in connection with publication of it.

Secretary Macdonald in his report will give you a record of the accomplishments during the past year, together with a statement of membership and finances which should enable you to share our opinion that our association is sound and making distinct progress. Further evidence of this will become apparent as development and progress reports are presented by committees at the general session Wednesday afternoon.

Criticism Welcomed

The executive committee wants to be considered as a representing, as well as a governing body. We welcome criticism and suggestions for the betterment of the association. So that all may know what is going on within this committee and so that we can better represent your interests, provisions will be made to present our problems throughout the year.

In presenting these thoughts for the executive committee I do not feel that I have done justice to the quantity and quality of work done by this group during the past year. The business of this committee is increasing constantly which makes it necessary for members to devote much time to association affairs. I feel that the men on this committee were particularly generous with their time during the year and that they have produced worthwhile results.

Upon behalf of the executive committee I want to thank all Divisional and Committee Chairmen and the many committee men who have served well and contributed much to a very successful year. Also, to express appreciation to the PAPER TRADE JOURNAL for their splendid cooperation. Personally, I want to thank the members of the executive committee for their support and efforts, and particularly Secretary Macdonald. His task is by no means easy but his efforts are reflected in the standing of the TAPPI, especially in a financial way. Mr. Macdonald is also our treasurer and much credit is due him for the splendid financial condition of the association. I know you will permit me to thank him and the members of the executive committee on your behalf.

As president, I have a few subjects which I would like to

present for your consideration at this time. As is the case in other industries today, the pulp and paper industry is faced with the necessity of improving quality, reducing costs, and developing new lines and products. Perhaps the most immediate need in many cases is orders but that is not the ultimate solution. Technically trained men and research are needed to meet the demands. The logical question to ask is "What is TAPPI doing to meet this situation?" The answer, judging from the length of it, is rather impressive For at least ten years we have had committees working extensively on programs of training in and for the industry. The text books on the Manufacture of Pulp and Paper resulted from the efforts of the joint Vocational Education Committee of the Industry of Canada and United States. We have a joint Education Committee of A.P.P.A., American Paper and Pulp Mill Superintendents Association and TAPPI and a Committee on Education of TAPPI at the present time. Excellent work has been done, is being done now, and should be continued but has this program supplied highly trained technical men very much needed in the industry? It has not because it was not intended to do so.

In my opinion the logical step in this direction was taken when the Wisconsin mills under the leadership of good technical men such as Ernst Mahler and Clarke Everest, installed the Institute of Paper Chemistry at Lawrence College, Appleton, Wis. This is not being said with any intention of favoring the Institute, to lessen the support of or to react unfavorably on the long established and well known courses in pulp and paper making at University of Syracuse, University of Maine and University of Wisconsin. These institutions have developed very good men who are needed in the industry, and they will continue to develop well trained men if their present scholastic standards are maintained. The support of the courses at these schools should be continued without abatement but the Institute of Paper Chemistry should also receive the support of all the mills in the industry and of TAPPI.

RONALD G MACDONALD, SECRETARY

What is TAPPI doing about research? The answer to this is gratifying. In conjunction with the American Paper and Pulp Association we are sponsoring a three-year research fellowship at the Forest Products Laboratory. The excellent results obtained thus far have fully justified this action. I think it is correct to say that we have, as members of our association, a majority of the research people of the industry, and of the government and scholastic institutions who are engaged in pulp and paper mill problems. We have contact through some of our members with work being done on the fundamental raw material of our industry in the Cellulose Division of the American Chemical Society. A considerable portion of the work of some of our committees involves research. Over a period of years we have had advisory committees on research for the Pulp and Paper Section of the Bureau of Standards and the Forest Products Laboratory. Two years ago TAPPI recommended to the American Paper and Pulp Association that there be one Central Research Advisory Committee to coordinate research on pulp and paper being conducted by the various government and scholastic institutions. This Committee of the American Paper and Pulp Association, consisting of TAPPI members, is now functioning, and after the results of its efforts become known, I am sure that this will be marked as a forward step in the research program. We, as an association, can help the research cause by guiding it into proper channels. Through the Central Research Committee; problems of a fundamental nature which are of general interest and value to the industry should be presented to government and scholastic institutions. Some method should be established to prevent false conceptions of research and to properly represent its value to the industry.

Before leaving the subject of research it seems appropriate to commend the work being done for the industry by the Government institutions. To those of us who are familiar with the work of the Forest Products Laboratory, it was particularly pleasing to learn of the appropriation to expand their activities and improve their facilities.

Pacific Coast Section

I am greatly indebted to the association for an interesting and inspiring trip last fall to the West Coast where I had the pleasure of meeting and addressing the members of the Pacific Coast Section. The meeting was well attended and there was intense interest displayed in committee work. While this is still a young section, they have problems already with which they will need TAPPI support. The pulp and paper industry on the West Coast is comparatively young, and one gets some wonderful impressions from a visit to the mills. The technical men are pioneering in certain respects, certainly in connection with the chief raw material—Western hemlock. Here one finds mills modern to the nth degree in which are incorporated the ideas gained from years of experience in pulp and paper making, and it would seem that there would be no technical problems in engineering and chemistry but that is not the case. The technical man has problems galore and he is making good progress in meeting and solving them.

The thoughts I want to leave with you about the West Coast are that the pulp and paper industry out there is a part of our industry and that the Pacific Coast Section is a vital and necessary part of TAPPI. As such their association technical problems become to a certain extent our problems and they should receive consideration in the research programs of the government institutions. It behooves us to find some means to better span the distance gap to facilitate mutual rendering of

service between TAPPI members on the West Coast and the association.

Technical Men Busy

The bad business and economic situation, which seems to be about over, apparently has had but little effect on technical men—at least not on TAPPI-ists. Secretary Macdonald's list of positions wanted is not alarmingly large and I have not observed any TAPPI-ists selling apples on the sidewalks of New York. It is during depressions that technical and research work is often put on the balance. Good quality of technical work can not only justify itself but also prove itself indispensable. However, in some cases it is just as necessary for the technical man to know how to prove the value and necessity of his work as it is to know how to do it. Of course, these remarks are addressed principally to the younger men of the association but I am sure that we are all very much interested in maintaining a high standard of technical work for the good of the association generally and anything that can be said or done to keep up and improve quality is in order.

In our association work we all have a wonderful opportunity to serve our respective professions and our industry and to accomplish collectively what it would be impossible to attain individually; but the collective result is largely influenced and affected by the individual effort. There are many ways in which the individual can serve his association but it is principally by using the means provided by the association. You should know your association and carry your full share of individual responsibility in connection with it. You can help by actively serving on committees, by attending meetings and participating in them, by contributing to the literature and by giving ideas.

In this address I have attempted to cover the most important phases of the work of the Executive Committee to give you an insight into some of our problems so that you would have a better appreciation of our accomplishments and of what we are doing. I hope I have partially succeeded, at least, in impressing the thoughts that all members have opportunities to serve TAPPI and that there is still much for all to do.

REPORT OF THE SECRETARY-TREASURER

R. G. Macdonald, secretary-treasurer presented the following report.

Although 1930 has been marked as a year of poor business conditions the Technical Association has continued to increase in membership and to improve its internal organization.

Membership

In 1930 there were 176 new members elected. On December 31, 1930 our total membership was 1,166, of which there were 755 active members, 302 associates and 109 juniors. Sixty nine members resigned or were dropped from our membership. There were 11 corporate members added to our roster and 47 companies became contributing members. Our corporate membership is now 92.

The association regrets to lose through death, the following members:

R. M. Adams, Amthor Testing Instrument Company
C. B. Barton, The Brown Company
C. B. Brooksbank, Cherry River Paper Company
E. B. Cowles, American Engineering Company
C. A. Jobson, New York and Pennsylvania Company
A. F. McCoy, A. P. W. Paper Company
W. F. Robertson, Robertson Company
T. H. Savery, Jr., Chicago, Ill.

Corporate Members

The corporate members that have joined the Technical Association in 1930 are as follows:

Steinhagen & Saenger, Warsaw, Poland
Puget Sound Pulp & Timber Company, Everett, Wash.
Longview Fibre Company, Longview, Wash.
United Paper Mills, Copenhagen, Denmark
The Upson Company, Lockport, N. Y.
Fraser Companies, Edmundston, N. B.
California Fruit Wrapping Mills, Pomona, Cal.
Papeteries Navarre, Paris, France
E. B. Eddy Company, Ltd., Hull, P. Q.
Hopper Paper Company, Taylorville, Ill.
Clyde Paper Company, Ltd., Rutherglen, Scotland

Contributing Members

At the last annual meeting of the association our articles of organization were amended to include in our membership companies not engaged in the manufacture of pulp or paper. Our charter contributing members are as follows:

Edgar Brothers Company, Metuchen, N. J.
Midwest-Fulton Machine Company, Dayton, Ohio
Beloit Iron Works, Beloit, Wis.
Fitchburg Duck Mills, Fitchburg, Mass.
S. M. Langston Company, Camden, N. J.
M. Gottesman & Co., New York, N. Y.
Downingtown Manufacturing Company, Downingtown, Pa.
English China Clays Company, New York, N. Y.
Cameron Machine Company, Brooklyn, N. Y.
Noble & Wood Machine Company, Hoosick Falls, N. Y.
Black-Clawson Company, Hamilton, Ohio
Moore & White Paper Company, Philadelphia, Pa.
John W. Bolton & Sons, Lawrence, Mass.
Pusey & Jones Corporation, Wilmington, Del.
Magnuson Products Corporation, Brooklyn, N. Y.
William A. Hardy & Sons Company, Fitchburg, Mass.
F. C. Huyck & Sons, Albany, N. Y.
Huron Milling Company, Boston, Mass.
Lagerloef Trading Company, New York, N. Y.
Minton Vacuum Dryer Corporation, Greenwich, Conn.
Farnsworth Company, Conshohocken, Pa.
Lindsay Wire Weaving Company, Cleveland, Ohio
Texas Gulf Sulphur Company, New York, N. Y.
Filtration Engineers, Inc., Newark, N. J.
E. D. Jones Sons & Co., Pittsfield, Mass.
American Engineering Company, Philadelphia, Pa.
The Dorr Company, New York, N. Y.
Johns-Manville, New York, N. Y.
International Bleaching Corporation, New York, N. Y.
Penberthy Injector Company, Detroit, Mich.
Walworth Company, New York, N. Y.
Eastwood Corporation, Belleville, N. J.
Staley Sales Corporation, Decatur, Ill.
Westinghouse Electric and Manufacturing Company, E. Pittsburgh, Pa.
National Aluminate Corporation, Chicago, Ill.
Wm. Cabble Excelsior Wire Manufacturing Company, Brooklyn, N. Y.
R. T. Vanderbilt Company, New York, N. Y.
Foreign Paper Mills, New York, N. Y.
Foxboro Company, Foxboro, Mass.
Stanco, Inc., New York, N. Y.
Dilts Machine Company Fulton, N. Y.
Paper Makers Chemical Corporation, Kalamazoo, Mich.
International Nickel Company, New York, N. Y.
The Norton Company, Worcester, Mass.
The Texas Company, New York, N. Y.
Allen-Sherman-Hoff, Philadelphia, Pa.
Vacuum Oil Company, New York, N. Y.
Maine Electric Company, Portland, Me.

Special Reports

The popularity of the association special inquiries and reports continues to increase and their value is considerable inasmuch as the data furnished in most cases have come from the most competent individuals in the industry who have been generous

and accurate. Most of the reports issued have been commended by those to whom the information was particularly helpful. One report, in particular, entitled, "Cracking of Fourdrinier Wires," was reprinted by the Wire Cloth Manufacturers Association and given wide distribution by that organization.

The problems presented deal with practical manufacturing details and are initiated by individuals in mills who are encountering difficulties. A large proportion of the replies come from practical operating men, some of whom are not members of the association. Everyone who contributes information of merit receives a complete transcript of the replies. The company members are also entitled to receive them in consequence of the financial support given by them to the association.

It is particularly interesting to note that an increasing number of the inquiries are being handled for the paper board and coated paper industry. This indicates that these branches of the industry are catching up with the procession and are becoming increasingly conscious of the fact that there is much opportunity for improving manufacturing methods by the proper exchange of technical information.

Following are the titles of the Special Reports issued in 1930:

1. No. 129—Paint for Sulphite Mill Interior
2. No. 130—Washing, Screening and Thickening Soda and Sulphate Pulp
3. No. 131—Bleaching Methods and Equipment
4. No. 132—Sulphite Digester Lining Thickness
5. No. 133—Construction Materials in Sulphite Mills
6. No. 134—Sheet Pulp Characteristics
7. No. 135—Scale Formation on Fourdrinier Wire
8. No. 136—Obtaining Opacity in Sulphite Paper
9. No. 137—Sulphite Digester Sizes and Pulp Quality
10. No. 138—Mechanical Deformation of Paper
11. No. 139—Position of Slice on Fourdrinier
12. No. 140—Embrittlement of Paper Filled Supercalender Rolls
13. No. 141—Cracking of Fourdrinier Wires
14. No. 142—Acid or Alkaline Stock for Beating
15. No. 143—Hard Cockles in Loft Dried Paper
16. No. 144—Container Liner Stuff Preparation
17. No. 145—Chip Screen Operating Data
18. No. 146—Granite or Brass Top First Press Rolls
19. No. 147—Trimming of Box or Container Boards on or off Paper Machines
20. No. 148—Paper Machine Felt Specifications
21. No. 149—Paper Coating Machine Difficulty
22. No. 150—Pitting of Soda Pulp Digesters

Fall Meeting

The Technical Association held its fall meeting at Erie, Pa. on September 3-5, 1930. About 300 attended and much credit is due to the local committee under the chairmanship of Henry F. Obermanns, general superintendent of the Hammermill Paper Company, for the excellent program presented. A complete report of the meeting appeared in the PAPER TRADE JOURNAL of September 11, 1930.

Articles of Organization Changes

At the Erie meeting the articles of organization of the association were amended to provide for the organization of local sections. Of particular interest among the changes were provisions creating affiliated members and the establishment of a program of section financing. Affiliated members are associate members of the section but receive no membership rights in the Technical Association of the Pulp and Paper Industry.

Employment

The use of the association headquarters as an employment exchange for superintendents, engineers and chemists has expanded considerably and a very large number of men obtained employment. It is believed that these services can be greatly extended and it is hoped that pulp and paper mill executives will use the association as one of the mediums for obtaining competent employes. A large proportion of the men for whom employment was obtained were not members of the association but no charges were made for these services. It has been gratifying to observe that at no time during the year were there many members unemployed and it was much easier to obtain employment for members than for non-members.

Publications

The PAPER TRADE JOURNAL continues to be the officially recognized medium for the publication of its papers, abstracts and important news items. The cooperation of the PAPER TRADE JOURNAL and its editor, Henry J. Berger with the Technical Association is appreciated. In addition to contributing a minimum of ten pages weekly to the exclusive use of the association the Journal has been very generous in furnishing reprints of papers published as well as the preprints of papers for the annual and fall meetings. In the preparation of Technical Association Papers the Lockwood Trade Journal Company extends to us the facilities of its entire publishing organization and in addition gives a substantial financial contribution to our work. For this we are indebted to George S. Macdonald, owner of the Lockwood Trade Journal Company. The cover stock for Technical Association Papers, Series XIII was kindly donated by the Bogalusa Paper Company.

The demand for Paper Testing Methods made a reprinting necessary. The other books previously published by the association include Bibliography of Paper Making 1900-1928, Papermaking Materials, and the Chemistry of the Sulphite Process, which are in fair demand but there are copies still available.

Forest Products Laboratory Fellowship

The three-year fellowship at the Forest Products Laboratory which is being partially supported by the Technical Association is now in its second year. Randall H. Doughty outlines the present status of the research problem in his paper entitled, "The Relation of Fibre Properties to Sheet Properties," presented at the annual meeting this year.

Cooperative Efforts

The Technical Association continues to be represented on the Joint Educational Committee with the A. P. P. A. and the A. P. P. M. S. A., the Joint Textbooks Committee with the Canadian Pulp and Paper Association, the Joint Committee on Approved Pulp Testing Chemists with the A. P. P. A. and the Association of Wood Pulp Importers, the Central Research Committee of the A. P. P. A. and on some of the American Society of Testing Materials Committees.

The Technical Association is a member of the American Institute of Testing Materials and has been represented on its committee D-8 on Bituminous Waterproofing and Roofing Materials by C. E. Libby of the New York State College of Forestry, Syracuse, N. Y. By invitation the association has recently become a member of the A. S. T. M. Committee A-10 on Iron-Chromium, Iron-Chromium Nickel and Related Alloys. J. D. Miller of the York Haven Paper Company and chairman of the Technical Association Materials of Construction Committee will be our representative. The association was also asked to lend its support to the formation of a committee to deal with testing methods and specifications for papers It is expected that such a committee will limit its interest to papers of engineering use. Some papers of this class that have already received attention are electrical insulating and condenser tissue.

We have also cooperated with the American Scandinavian Foundation. During the year all the American fellows have returned to the United States and there is now one Swedish fellow at the Bogalusa Paper Company.

Upon special invitation the Technical Association was represented at the twenty-fifth anniversary meeting of the Verein der

Zellstoff und Papier Chemiker und Ingenieure at Berlin, Germany, in December. Our representative was Bjarne Johnsen of the Hammermill Paper Company. Paul Koenig of the International Paper Company was also present.

Lake States Section

On October 17 the Lake States Section of the Technical Association was organized at Menasha, Wis. Allen Abrams, Joseph Slater and the secretary were present. Considerable time at this meeting was devoted to writing the by-laws of the section. The first chairman of the section is G. K. Hill of the Gilbert Paper Company. Otto Kress of the Institute of Paper Chemistry is vice-chairman and George Hrubecky of the John Strange Paper Company is secretary. The by-laws were submitted to the executive committee for approval and a formal charter was issued to the section on January 5, 1931.

The section is holding meetings monthly at Menasha and several of the presented papers have been published. The attendance at the meetings has been good and it is expected that the association will grow considerably as a result of the sections activities.

Pacific Section

Our section in the Pacific northwestern states has completed another excellent year, having held meetings at Longview, Wash. and Portland, Ore. The officers until October were R. S. Wertheimer, Longview Fibre Company, Chairman; Ralph Reid of St. Helens Pulp and Paper Company, vice-chairman and Dr. H. K. Benson of the University, secretary. The officers elected at the October meeting at Portland, include C. W. Morden, Portland, Oregon, chairman; I. H. Andrews of Powell River Company, Ltd., vice-chairman, and M. W. Black of the Inland Empire Paper Company, secretary.

The Portland meeting was devoted almost entirely to organizing its committee work to parallel that of the association.

Divisional Organization

A complete description of the new divisional plan of organization of the association has appeared in the trade journals. Under this plan the distinctive interests of our members are considered. These include management, engineering, raw materials, operation, testing, research and development. Appropriate committees have been formed in each division and their respective fields of work have been carefully defined. The response of our members to putting this organization into effect has been excellent and a good start has been made. It is expected that the next few years will witness many worthwhile contributions to the knowledge of pulp and papermaking as a result of the committee program which is now under way.

Of particular interest in the new divisional scheme is the plan to have each committee report annually the important developments that take place in its special field of interest. Some of the committees have presented excellent reports at this year's annual meeting.

New Committees

Under the new divisional plan it has been necessary to bring several committees into being. In the management division the new education committee replaces the training for the industry committee and has a broader field in which to work. A committee on management methods and one on patents has also been added and the waste committee has been retained.

In the engineering division have been assembled the heat and power committee and the materials of construction committee and a new committee on equipment has been formed. The latter is composed of consulting engineers and equipment builders who are expected to keep the industry informed concerning improvements made in machinery and other types of equipment.

The raw materials division is new and its object is to study sources, storage, economics and specifications of fibrous and non-fibrous materials. An excellent report relating to the non-fibrous materials has been prepared by Arthur C. Dreshfield for the past year. The committee on fibrous raw materials for 1930 has been engaged in continuing the work begun by the fine and special paper committee of 1929. Since this work is not within the scope of the committee's activities as defined by the executive committee it will hereafter be handled by other committees.

The operating division includes the old committees on mechanical pulping, alkaline pulping, acid pulping, and stuff preparation. New committees include those on the preparation of fibrous and non-fibrous materials, finishing, processing and converting and paper manufacture. The finishing, processing and converting committee is at present limiting its attention to the problems of coated paper manufacture.

The new paper manufacture committee is devoting its attention to paper machine parts and has made reports this year on felt operation and suction press rolls.

The testing division includes the former committee on pulp testing, paper testing and non-fibrous materials testing and in addition a committee has been formed to deal with the testing of wood, rags, straw, old papers, etc.

The research and development division includes the previous existing committees on abstracts and bibliography and the special committee on permanence and durability. A new committee on use requirements of pulp and paper has been added.

Acknowledgment

The secretary has received a great amount of assistance from many members and has been grateful to receive it. The prevailing spirit of good will that exists within the association has made possible the many accomplishments in the past year and assures success for the immediate future.

TECHNICAL ASSOCIATION OFFICERS

President, M. A. Krimmel, Hammermill Paper Company, Erie, Pa.; Vice-President, Allen Abrams, Marathon Paper Mills Company, Rothschild, Wis.; Secretary-Treasurer, R. G. Macdonald, 370 Lexington avenue New York.

Executive Committee: M. A. Krimmel, chairman; Allen Abrams, Marathon Paper Mills Company, Rothschild, Wis.; G. N. Collins, International Paper Company, New York; J. S. Bates, Price Bros. & Co., Ltd., Quebec, P. Q.; R. Bell-Irving, Powell River Company, Powell River, B. C.; C. C. Heritage, Oxford Paper Company, Rumford, Me.; W. O. Johnson, Strathmore Paper Company, Woronoro, Mass.; J. H. Slater, Escanaba Paper Company, Escanaba, Mich.; J. F. Rhoades, Mead Corporation, Chillicothe, Ohio; R. G. Macdonald, New York.

TO CONFER ON WASTE PAPER

A committee representative of the Paperboard Industry and representing various sections of the country has been appointed by the Paperboard Industries Association to confer with a similar committee representing the Waste Paper Division of the National Association of Waste Material Dealers, Inc. The purpose of the conference is to consider matters connected with the waste paper industry, which are believed to be of interest and importance to the members of both Associations.

The Conference referred to above will take place sometime following the Annual meeting of both Associations which occur during the week of March 16.

NORWEGIAN PULP PRODUCTION IN 1930

Estimates of production by Norwegian mills manufacturing chemical pulp, place the output of bleached sulphite for sale during last year at 160,000 metric tons as against 150,700 tons in 1929; unbleached sulphite during this period declined from 133,600 tons to 127,000 tons while unbleached sulphate or kraft pulp dropped from 24,900 tons to 22,000 tons.

To these quantities there should be added a total of 134,500 tons in 1929 and 125,000 tons in 1930 for home use, bringing the total production of these grades to 443,700 tons and 434,000 tons respectively.

Technical Association Papers and Reports

Presented at the Annual Convention of the Technical Association of the Pulp and Paper Industry at the Pennsylvania Hotel, New York, February 16-19, 1931—Representative Men of the Pulp and Paper Industry Discuss Numerous Important Problems of Timely Interest.

The Steam Accumulator in The Board Mill *

By N. H. Sandberg [1]

The steam accumulator in conjunction with a high pressure power plant has many advantages. There are, however, certain conditions that must be taken into consideration when working out the heat balance of the plant to make the use of an accumulator a profitable investment. In Fig. 1 we find the original heat balance worked out for the Waldorf Paper Products Company's high pressure power plant installed in 1929. This heat balance was based on an hourly average requirement for 225 ton daily production. It was at the time felt that conditions as outlined in Fig. 1 could be maintained and a steam accumulator with a capacity of 12,000 cubic feet was purchased and installed. From this illustration it is apparent that all the steam passing through the d. c. unit is delivered to the accumulator while the steam used for the generation of the a. c. current is exhausted directly into the process steam header.

To get the full benefit from the accumulator it is essential that the steam required for power production must always be less than the average process steam demand. A sufficient pressure differential between the turbine exhaust and the process steam is necessary to allow the accumulator pressure to vary between these two pressures. This gives the accumulator storage or steam releasing capacity and will under such conditions maintain a proper balance between the process steam and the electric energy required. It has already been pointed out that the process steam demand must exceed the exhaust steam supply from the turbines so that at all times there is need for make-up steam for process work direct from the boiler. This additional amount of steam is made up through the reducing valves marked P.R.V. to the accumulator where it is de-superheated, together with the exhaust steam from the d. c. turbine. For this purpose cold raw water is introduced into the accumulator.

During troublesome periods on the paper machine, short shutdowns for felt changes or drier breaks, the electric and steam loads get off balance. It is during periods of this kind that the electric load greatly exceeds the steam load, and the surplus steam from the turbines is stored in the accumulator. At any time this condition extends over one-half hour it is usually possible to readjust the electric load before the storage capacity of the accumulator has been depleted. No high pressure steam from the boiler is admitted to the accumulator on these occasions. When the paper on the machine is started again we have a rapid increase in demand for process steam. This sudden demand for steam is furnished by the steam release in the accumulator by allowing the pressure to drop back into normal range.

If properly installed and the heat balance similar to the one outlined in Fig. 1 is maintained the steam accumulator will undoubtedly perform the following functions:

Reduction of Installed Boiler Capacity

With the accumulator it is possible to even out the peaks in the steam demand on the boiler which will allow a reduction in boiler capacity. This also improves the overall efficiency of the boiler as it permits practically constant firing.

A master pressure gauge should be located in the boiler room and the firing should be regulated so as to keep the accumulator pres-

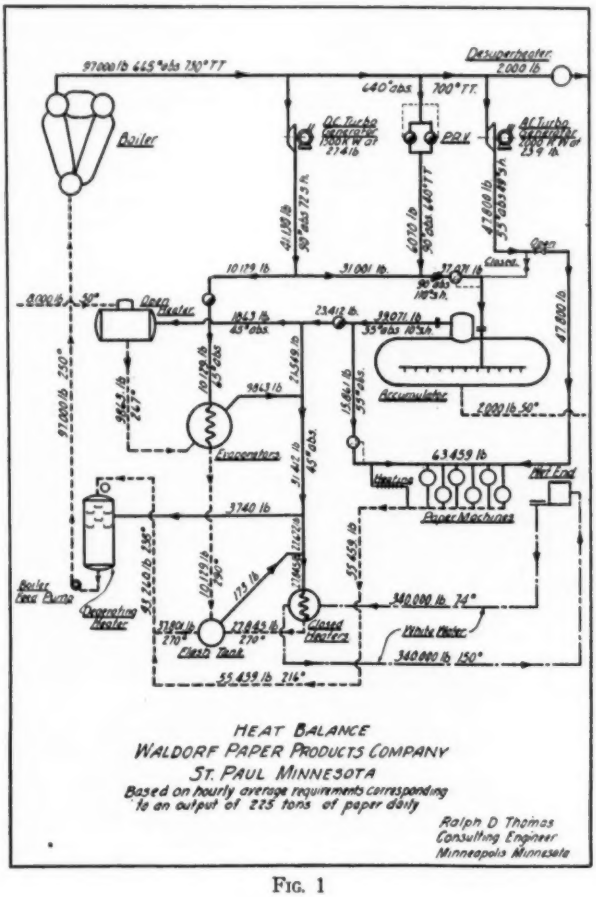

FIG. 1

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Heat and Power Committee.

[1] Superintendent, Waldorf Paper Products Company, St. Paul, Minn.

Air Compressors 1.53%
Foundations, Structural Steel and Building Changes 8.43%
Boilers 36.11%
Turbo-Generators, Motor Generator and Switchboard. 26.01%
Accumulator 4.01%
Evaporators & Heaters 3.71%
Boiler Feed & Vacuum Pumps 3.53%
Low Pressure Piping 3.68%
High Pressure Piping 3.98%
Firing Equipment 4.52%

FIG. 2
Cost distribution of the new power plant

sure within a certain range. When the accumulator pressure drops below a certain point the firing is increased and the pressure of a boiler is raised over 640 pounds. At this point the overflow valve automatically opens and admits live steam into the accumulator. On the other hand when the accumulator pressure has worked up near the high range the firing is decreased and the boiler pressure is allowed to drop below 640 pounds and the overflow valve closes. This makes it possible to maintain practically a constant boiler pressure. When the load on the turbines is suddenly decreased no steam is wasted by the safety valves popping as when the pressure reaches 640 pounds the steam passes into the accumulator through the overflow valve until the firing can be sufficiently reduced.

Stabilization of Process Steam Pressure

One of the most important functions of the accumulator in the board mill is the stabilization of pressure and the de-superheating of the make-up steam. If an exhaust pressure on the turbines of 75 pounds gauge and the process steam pressure of 44 pounds is maintained as outlined in Fig. 1, it is possible to allow the accumulator pressure to vary within close limits of these two pressures and still maintain a constant pressure on the process steam. This insures the maximum drying capacity as well as uniform drying and improved quality on the paper machines.

Elimination of Stand-by Power

While this feature of the accumulator would only apply to a plant without any auxiliary power service for starting up in case of a forced shut-down, the Waldorf Paper Products Company's boiler room is entirely motorized with the exception of one boiler feed pump. In case of a shutdown on the a. c. turbine, all the boiler room apparatus would go down and without some outside source of power it would be impossible to start the boiler again. With the accumulator at an average pressure and the use of a low pressure turbine on one boiler feed pump and one pulverizer, it is possible to operate with steam from the accumulator a sufficient length of time to get the a. c. turbine back on the line again. It has been possible for the Waldorf Paper Products Company to eliminate a stand-by service contract which has resulted in a considerable saving. It is considered that the last mentioned feature of the accumulator is most important during the winter months when steam is required for heating the plant as in event of a forced shutdown of the boiler the accumulator will supply heating steam for several hours or until the spare boiler unit could be put into service.

Referring again to the Waldorf installation shown in Fig. 1. The heat balance was arrived at from the average requirements for 1928. The additional capacity for future expansion provided for in the new plant was based on the 1928 ratio between steam and power required per ton of paper. The additional tonnage taken on with the completion of the plant was mostly high grade and light weight boards requiring a great deal more power for stock preparation while very little additional exhaust steam was needed. This, of course, materially affected the operating conditions in the new plant. The situation was further aggravated by an increase in power demand by other departments. These departments have no use for process steam except for heating in the cold season. The results were that the entire plant was thrown off balance, the electric load had exceeded the steam load, and the proper pressure differential of the turbine exhaust and the process

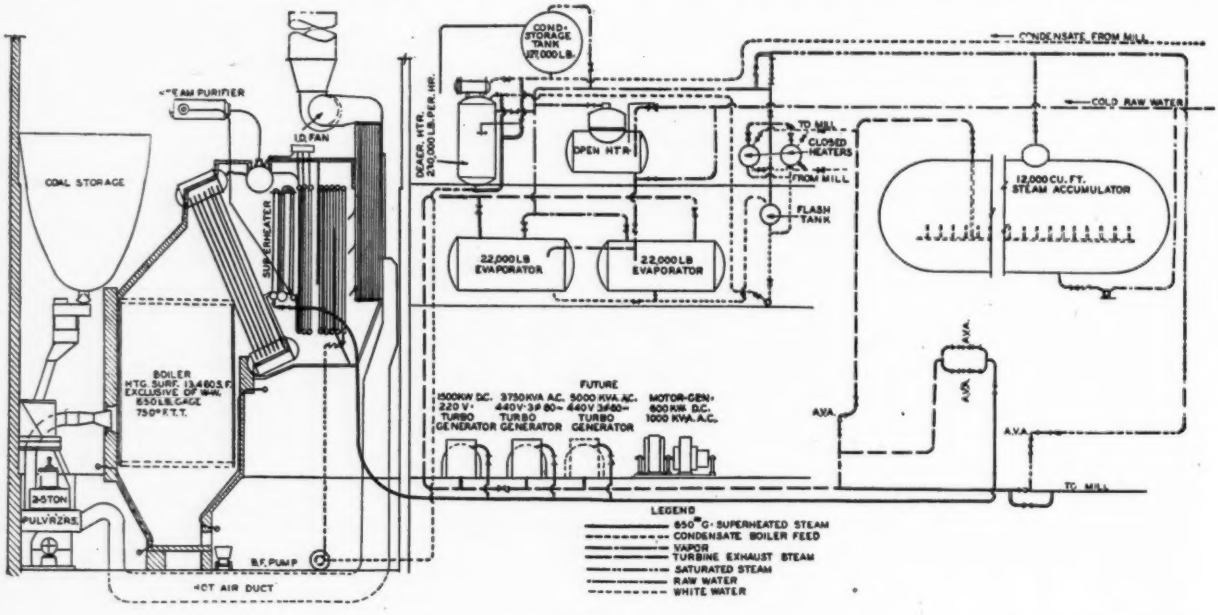

FIG. 3
Schematic arrangement of the equipment

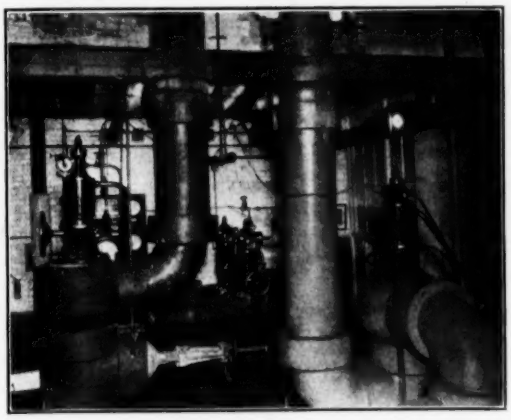

FIG. 4
Closeup of the automatic accumulator control valves.

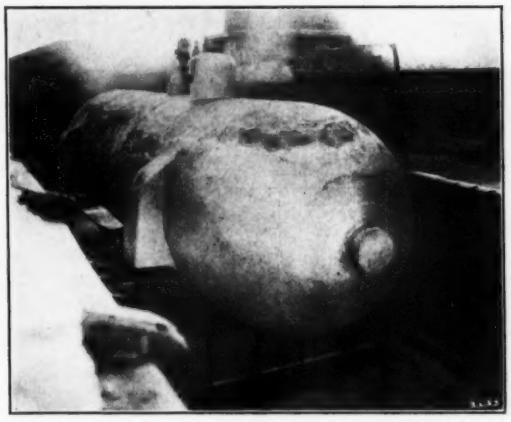

FIG. 5
Steam accumulator, 16 ft. in diameter, 65 ft. long, 12,000 cu. ft. volume.

steam could no longer be maintained without exhausting to the atmosphere. In order to reduce the volume of the exhaust steam it was necessary to drop the back pressure of the d. c. unit to 55 pounds and the process steam to 40 pounds gauge. This, of course, practically eliminated the steam storage feature of the accumulator, but nevertheless it was left in service to maintain constant process steam pressure. It was further necessary to equip one of the boiler feed pumps with a low pressure condensing turbine replacing the 300 h. p. induction motor which was originally installed. This turbine takes steam at the throttle at 40 pounds gauge and with a vacuum of 28 inches absolute maintained in the condenser, has a water rate of about 35 pounds. By this installation the boiler room auxiliary load was reduced over 200 k.w. and made it possible to generate an additional 300 k.w. on the a. c. unit as the steam required for that amount can be condensed through the low pressure turbine. In other words, it increased the generating capacity 500 k.w. in proportion to the original arrangement.

When the production in the mill can not be scheduled to balance the power plant which usually occurs when light weight paper is made on both paper machines the power plant avails itself of the low pressure condensing unit and which has so far been of sufficient capacity to balance the power and steam requirement.

In the writer's opinion the steam accumulator offers unlimited possibilities in the board mill, but it is very apparent from the operating difficulties encountered at the Waldorf Plant and discussed in this article that the largest electric load and the smallest possible steam load that might occur at one time must be balanced in order to use the accumulator to full advantage.

Education Committee Annual Report

It is not the intention of the education committee to offer a progress report at this time. Rather an attempt is made to set forth for the benefit of our membership some of the projects which are engaging the attention of the committee at this time. Because of employment conditions the placements made through the medium of the committee were fewer than in former years.

Reports from several areas are not available at this time, therefore statistics which would be incomplete are omitted.

Attempts are being made to make a comprehensive study of the place of technically trained men in our industry. This is being done by means of a carefully prepared questionnaire which will reach every pulp and paper company served by the Technical Association. In order to draw your attention to the data which we hope to secure we are including the topics covered in this survey in this report.

I. Scope of Jobs (Opportunities for technically trained men). 1. Technical control, 2. research, 3. operation (production), 4. maintenance, 5. power, 6. management, 7. sales, 8 costs, 9. woodlands.

II. Type Jobs. This includes an enumeration of the entrance jobs open to college and university men in the industry. This desiderates the interest of members of the faculty who may be called upon to advise undergraduates in the selection of their life work.

III. Source of Technical Men: 1. High schools, 2. vocational schools, 3. colleges and universities.

It is hoped that the evaluation of data secured under this item will give to the industry a source of obtaining suitable men for jobs of certain specifications. It should also result in information which will be of value to counsellors in schools and colleges who may be called upon to advise undergraduates in the selection of their life work.

IV. Training Program for Technical Men: 1. Pre-employment, a. High school, b. vocational, c. college.

2. On Job—Summer Vacation Employment. a. Operating jobs, b. technical jobs, c. service jobs, d. maintenance jobs.

3. In service: a. Job practice, b. Educational or technical: 1. Study of pulp and paper manufacture, 2. scientific methods of plant management. 3. economics and psychology (humanics).

This item refers to existing agencies which offer training programs along the levels indicated.

V. Factors and attributes concerning industry which prospective employee should know (job specifications).

VI. Factors and attributes (personal factors) which govern selection of technical employees by the industry.

We believe that the compilation of such data will serve as a basis of working out a standard method of procedure to be followed in conducting an educational program for the industry.

In working out this program, we ask the assistance of each individual member as well as the corporate members of our organization.

The Federal Board of Vocational Education, Washington, D. C., has been instrumental in assisting several major industries in the United States in inaugurating educational programs. It is recommended that our association invite the Federal Board of Vocational Education to assist us in our educational work. Every state has a state board of vocational education. Cooperation on our part with these agencies should secure to us the experiences and assistance of these agencies which are skilled in this type of work.

When the data mentioned in this study shall have been tabulated, it is recommend that the report be made available to each member of the association.

Briefly, this is the status of the work of the educational committee at this time.

H. G. NOYES, Chairman

Low Pressure Steam And Paper Machine Drying*

By Donald Ross-Ross [1]

Much has already been written on various phases of paper machine drying, making it difficult to present anything new of interest. It has been clearly demonstrated in the past that the so called "blow through" type of paper machine drainage system is far superior to the old type of system in which each drier had its own trap.

This superiority manifested itself in the following distinct manners:—

(1) Greater drying capacity through,
   (a) Removal of condensate from all driers, leaving none water-logged such as are to be found in the older type.
   (b) Complete removal of all air from the driers due to the rapid circulation and scouring action of the steam.
   (c) More rapid heat transfer due to the higher velocity of the heat bearing fluid (steam) over the metal surface of the driers (a feature which is demonstrated in the design of condensers, evaporaters, etc., where high rates of circulation have shown higher heat transfer rates than slow circulation).
(2) Greater freedom from cockling due to more even drier surface temperatures.
(3) Graded temperatures.
(4) Very much lower maintenance cost.

In new installations, the question has never been one of deciding between "blow-through" or "trap" systems; but in the case of older machines already having traps on each drier, the mill executive will ask what is to be gained in making a change. His question is answered in the preceding tabulation of the benefits of the blow through system. Water-logging of driers or the failure to remove air will leave cold driers, and it is only a matter of simple arithmetic to estimate the decrease in production resulting from the "dead" driers. The value of better heat transfer is more difficult to estimate. It is obvious to those familiar with paper and paper machines that driers alternating in temperature will aggrevate cockling. There is no doubt that the grading down of temperatures towards the wet end of the machine has substantially improved the drying of paper, and that the simplicity of equipment and lack of innumerable traps has greatly reduced maintenance costs.

In view of these statements, the writer will illustrate a typical case by describing the installation of a "blow-through" system replacing the then existing traps on No. 1 machine at the Beauharnois Division of the Howard Smith Paper Mills Ltd. This blow-through system, however, formed only a part of the entire scheme of things and it is difficult to say how much improvement was due to it and how much was due to other factors.

The writer was called to this division to make a report on the steam situation in the mill in which there are two machines. Steam, apart from that for the machines which are steam engine driven, is also used for rag cooking, loft drying, heating and for incidentals; but there is no wood pulp cooking or bleaching. Steam

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Power and Heat Committee.

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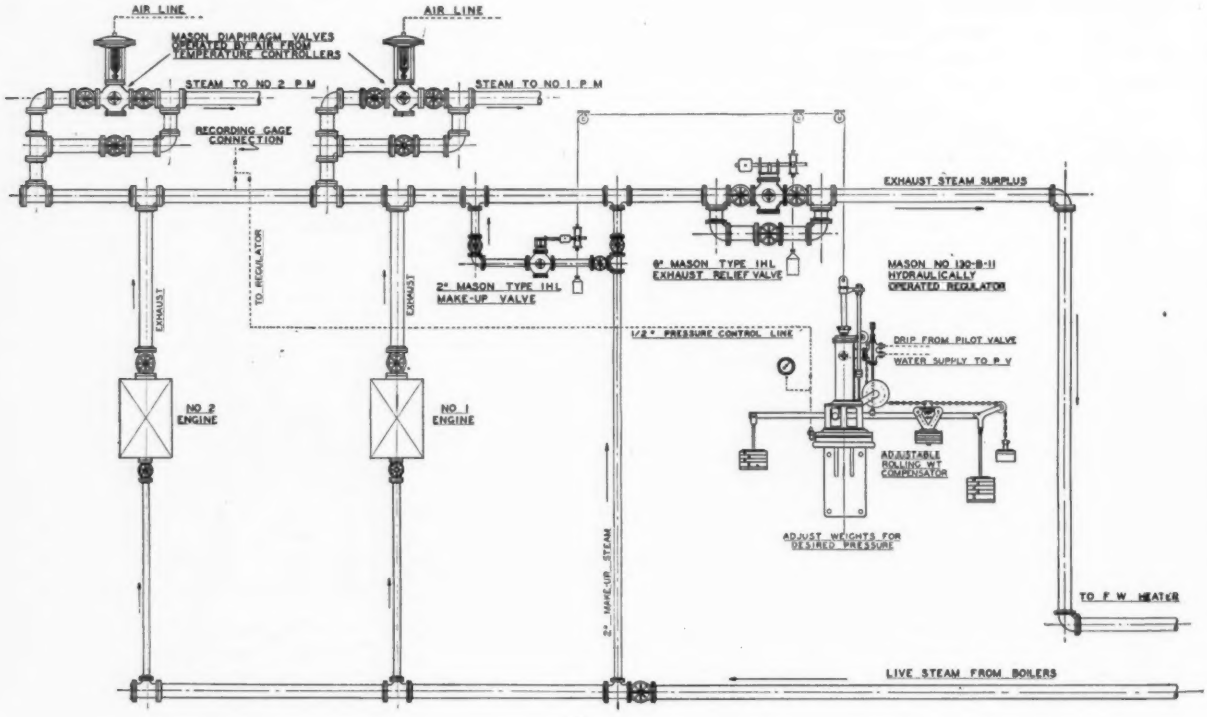

AIR LINE
AIR LINE
MASON DIAPHRAGM VALVES OPERATED BY AIR FROM TEMPERATURE CONTROLLERS
STEAM TO NO 2 P M
STEAM TO NO 1 P M
RECORDING GAGE CONNECTION
EXHAUST STEAM SURPLUS
TO REGULATOR
EXHAUST
EXHAUST
2" MASON TYPE IHL MAKE-UP VALVE
6" MASON TYPE IHL EXHAUST RELIEF VALVE
MASON NO 130-B-11 HYDRAULICALLY OPERATED REGULATOR
1/2" PRESSURE CONTROL LINE
DRIP FROM PILOT VALVE
WATER SUPPLY TO P V
NO 2 ENGINE
NO 1 ENGINE
ADJUSTABLE ROLLING WT COMPENSATOR
ADJUST WEIGHTS FOR DESIRED PRESSURE
2" MAKE-UP STEAM
TO F W HEATER
LIVE STEAM FROM BOILERS

FIG. 1

from the exhaust of the two engines, in excess of the drying requirements of the paper machines, was relieved through relief valves into a common 6-inch steam line back to the feed water heater in the boiler house. A considerable amount of overflow occurred at the heater due to the injection water used at the vacuum pump, the overflow at a fairly high temperature being lost down the sewer. There was also a certain amount of exhaust steam that could not be absorbed in the feed water heater and this was lost up the atmospheric relief.

The writer, some three years previously, at the Cornwall Division, had made an installation of a low pressure header, connecting the four paper machine engines together in such a manner as to maintain a constant back pressure against them, the four machines drawing their steam from it. A deficiency of exhaust steam for drying was automatically taken care of by one high pressure make-up valve, and an excess of exhaust steam could be relieved to the feed water heater by a relief valve. Both valves were operated by one hydraulic motor. A complete description of this installation was given by the writer in "POWER" June 26th, 1928, the article being reprinted in the "Paper Trade Journal" August 9th, 1928. The savings so effected were obtained in two directions.

(1) A reduction in steam consumption of about 1000 pounds per ton of paper through the mutual interchange of steam from the engines between all machines and hence the lowering of make-up requirements.

(2) The raising of the boiler feedwater temperature an amount equivalent to a further saving of 1100 pounds of steam per ton of paper through carrying the excess steam back to the feedwater heater.

Formerly when the paper machine controls were shut off, or partially shut off, the various engine exhausts were relieved out of doors.

Beauharnois Installation

This same layout was proposed for Beauharnois. Sometime later, the management of that division expressed dissatisfaction with the old drying equipment in the No. 1 machine on the grounds of:—

(1) Lack of drying capacity, (2) Considerable cockling at times, (3) Difficulty in maintaining uniform drying through hand control, (4) Excessive attention required by mechanics to keep traps operating.

A suitable blow-through system was proposed, and ultimately temperature control was decided upon.

Although these two distinct proposals were made some six months apart, authorization to proceed on both came about seven or eight months after the latter proposition was submitted. The installation of the low pressure header between both machines, the blow-through system and temperature controls for No. 1 Machine were thus gone ahead with simultaneously.

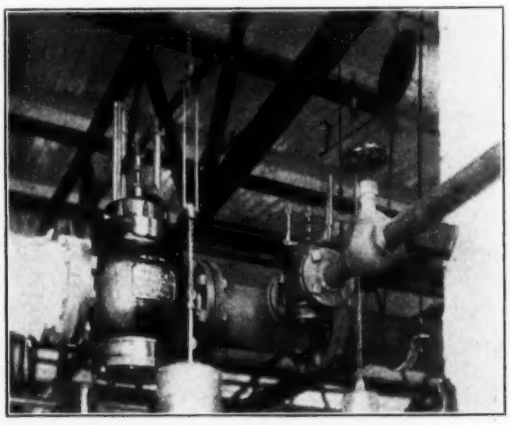


FIG. 2

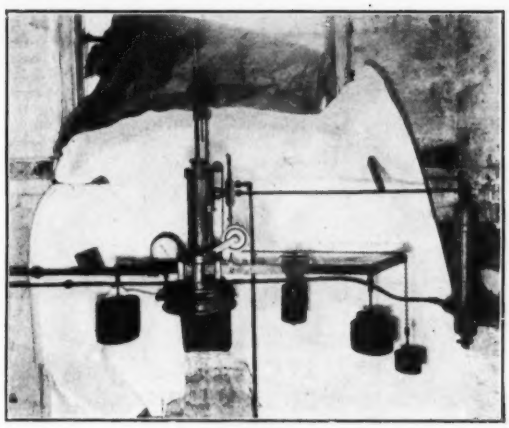


FIG. 3

Fig. 1 illustrates, in diagram, the low pressure steam header. Live steam from the boilers passes through the engines where it is exhausted into a common exhaust main from which the paper machines draw their drying steam. An hydraulic motor acts as a master controller, operating a live steam make-up valve and an exhaust relief valve. The former receives steam from the high pressure main and the latter relieves any excess exhaust back to the feed water heater.

It will be seen in the diagram, but more fully in Fig. 2., that both valves are fitted with lost motion links. The fulcrums of the two valves are the reverse of one another, so that when the link end of the make-up valve's lever is down the valve is closed and when the link end of the relief valve's lever is down the valve is fully open. The make-up valve's lever is weighted on the link side so as to go down with the link. On the other hand, the relief valve's lever is weighted on the opposite end so as to have its link end go up with the link.

Assuming that the header pressure is below the desired pressure and that hence the hydraulic piston is at the extreme bottom of its travel, then both links will be up at the top of their travel. The live steam valve lever will have been carried up and the valve will be fully open. On the other hand, the lost motion link on the relief valve will have travelled away from the lever once the counter weight has heated the valve. Now, as the piston moves up, it will eventually reach its mid travel. At this point the high pressure valve will have seated and the link will begin to move down away from it. At the same instant the lost motion link on the relief valve will begin to bear down on the lever by means of its suspended weight. As the hydraulic piston continues on its upward travel, the relief valve will open wider and wider until finally both have reached the end of their travel. Thus under any operating condition, it is possible to maintain an absolutely constant pressure between these control valves, the engines and the machines.

There are three salient advantages to be obtaind from this hook-up: (1) Steam saving, (2) Even back pressure against the engines, substantially improving their speed regulation, and (3) Even pressure against the temperature control valves, thus making this operation more effective.

Assuming that the machine required over a period of time an absolutely even supply of steam, if the pressure in the header rose, the temperature control valve would have to close slightly; or, if the pressure fell, the valve would have to open slightly wider in order to maintain the constant supply of steam. Thus the temperature control valves would be forced to hunt, not on account of changing conditions in the machine, but because of changing steam pressures exterior to the machine. The constant pressure

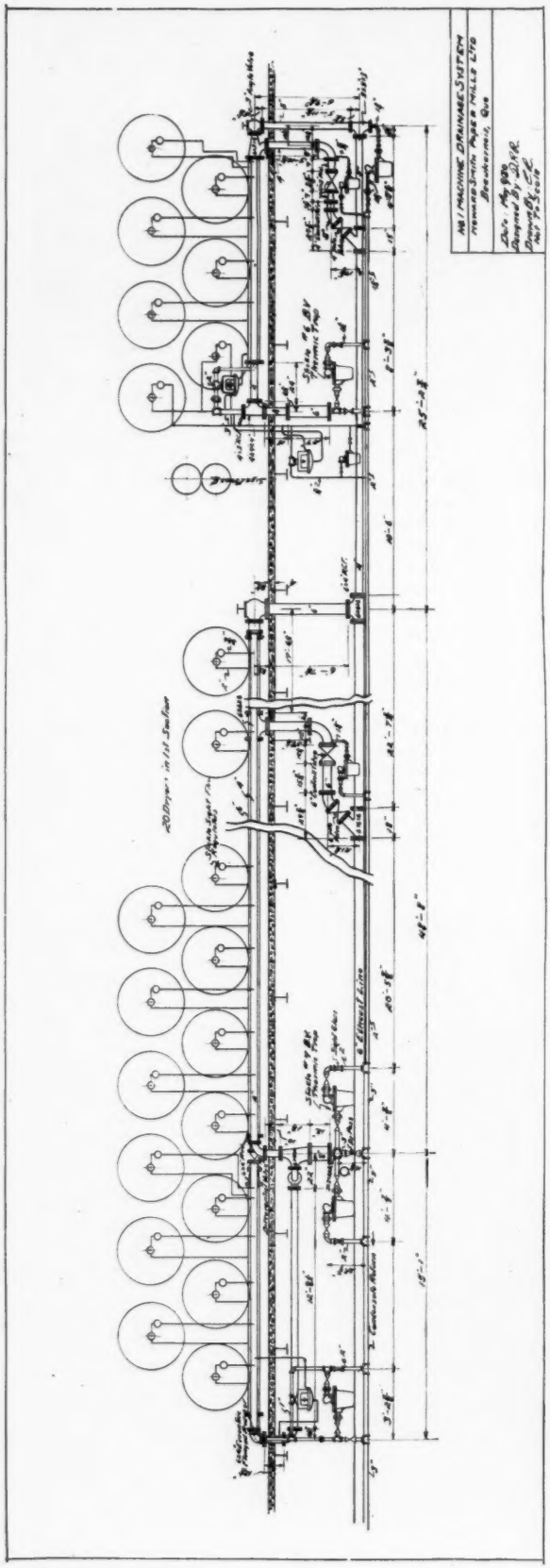


FIG. 4

of this low pressure header removes such an undesirable condition.

Fig. 3 shows the hydraulic motor. An interesting feature which the writer has adopted in other installations of hydraulic motors, whether for similar installations or for reducing valves, is the double water connection shown at the right of the picture. Two quarter inch brass pipe lines lead to the settling chamber through two inflowing check valves, one line being connected to town water supply, and the other to mill service. The higher pressure service predominates, closing the check valve of the other. In the event of failure of one or the other, there is still one supply of water to operate the motor. However, there is an emergency relief valve of the ordinary type on the low pressure header (not shown on the diagram, Fig. 1) in case of any major break-down of the equipment.

Centralization of control is something which is developing very rapidly. The tendency is to bring indicating, recording and integrating instruments, and controllers of various kinds together at one control point where an operator can have them readily under his observation.

The success of any blow-through system rests in the ability of the equipment to maintain continuous, uniform differential between the steam and drainage headers on the various sections of the machine. As soon as the differential fails to exist, the driers in that section will naturally become water-logged, whereas variations in differentials will tend to upset drying conditions.

Fig. 4 shows the drier arrangement of No. 1 Machine, a main section of twenty driers and a section following the size tub of seven driers. With the high grade rag papers run on this machine, it was particularly desirable to be able to control drying conditions and have them continually under observation. The two drier sections virtually form two independent drying machines, each having three pressures for their two sections (hence two differentials), and each having one thermostatic control valve. The thermostatic valves are shown situated on the horizontal runs above the laterals, whereas the vertical risers are purely for hand control in the event of trouble with the automatic controllers.

The 6 inch and 4 inch exhaust line at the bottom of the figure is the low pressure header which is maintained at a constant pressure (already described, and illustrated in Fig. 1.)

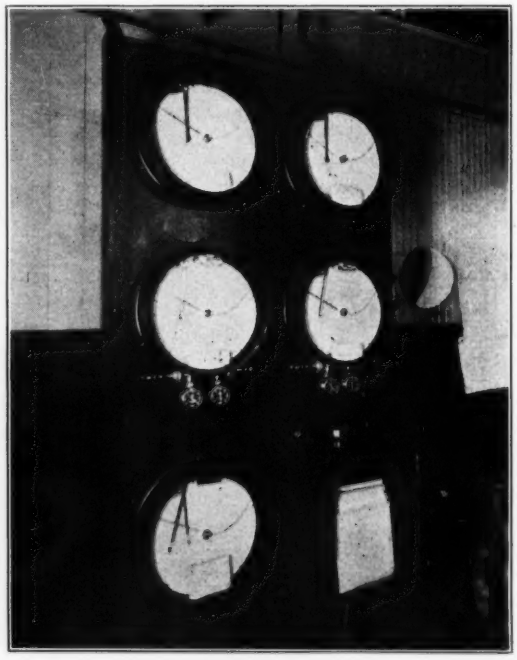


FIG. 5

The machine control panel is shown in Fig. 5. The top, left hand instrument is a three pen pressure recorder for the main section and the chart obtained from it is typically illustrated in Fig. 6. Below it is the temperature controller for that section. The bottom instrument is a two pen pressure recorder, giving a record of the low pressure header and the vacuum carried by the one vacuum pump for the two machines and the entire mill heating. Fig. 7 gives an excellent idea of the evenness of the steam pressure maintained.

The top, right hand instrument is a two pen pressure recorder for the size section. A three pen recorder could be used to advantage, but it was felt the extra cost of an additional pen was hardly warranted in this case. One pen is connected with the centre pressure, i.e., the wet end steam pressure (and the dry end condensate pressure). The other pen is connected with the top and bottom pressures, i.e., the dry end steam pressures, and the wet end condensate pressure. Valves are provided behind the panel to shut off one or the other. In this way it is easy to check, over a period of time, one or the other differentials by reference to the centre pressure.

Below the pressure recorder is the temperature controller for after-the-size section, and below the controller a recording tachometer.

The panel is situated right beside the machine tender's desk in order that he can continually refer to it. In the event that the moisture in the paper is not right, the machine tender or back tender need only to turn a key in the top right hand side of the controller case and he will move a pointer either up or down to a temperature point which he thinks will meet his requirements. The recording pen will follow as soon as the steam in the machine reaches the new set temperature.

Fig. 8 shows the location of the thermostatic valve of the main section situated beneath the floor and shows the low pressure header from which the machine receives all its steam.

It is regrettable that the writer has not had the time to gather comparative figures on steam consumptions before and after the installations; but he feels sure that the savings are reasonably worth while. It is planned to connect up the lofts and all heating with the low pressure header; this work is going ahead at present.

Further economies are expected, together with reduced maintenance in so far as a large number of small reducing valves can be dispensed with.

With regard to the drying system, it is safe to say that: (1) Cockling troubles have been substantially reduced. (2) Final moisture has been more satisfactorily maintained. (3) The capacity of the machine has been substantially increased.

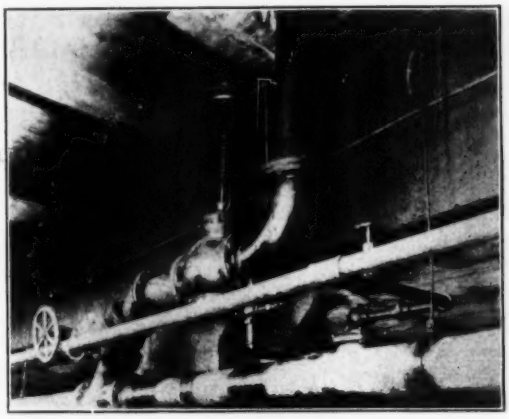


FIG. 8

How much of the increase in production now obtained is due to the drying system, and how much is due to the bonus system which came into being about the same time, it is difficult to estimate. There is no doubt that it has been made possible for the machine crews to go out after productions which they could never have got with the old traps. The machine is now drying paper comparable in pounds per square foot of drying surface per hour with more modern machines, on grades and weights where formation and other factors do not restrict production.

Insulation of Air Cooled Boiler Walls

In air cooled boiler wall construction, adequate and proper insulation is highly essential to conserve so far as possible the heat recovered by the air, to furnish suitable clearance for the air travel with ample scrubbing action and the elimination of undue friction loss, and to resist the infiltration of air which would interfere with the air flow over the surfaces to be cooled. The customary construction is to build the outer shell entirely of insulating materials, an approved erection consisting of outer, replaceable panels of stiff sheets of asbestos fiber and Portland cement boards, an inner lining of hard insulating mill board and an intermediate layer, or blanket, of resistant, felted asbestos fiber.

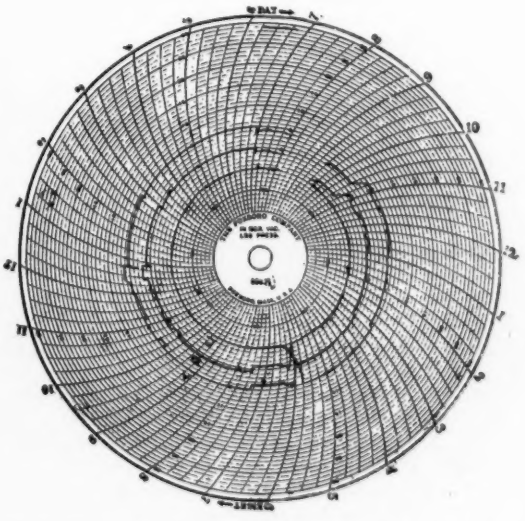


FIG. 6

A. Dry end steam pressure. B. Wet end steam pressure and dry end condensate pressure. C. Wet end condensate pressure.

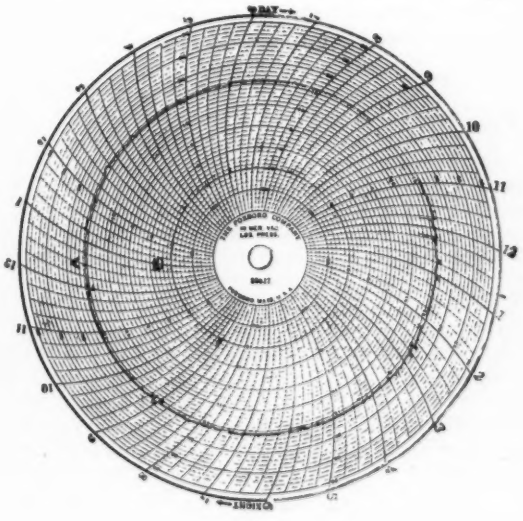


FIG. 7

A. Low pressure header. B. Vacuum pump.

The Efficient Drying Of Paper*

By E. W. G. Cooper [1]

In the presentation of this paper, I venture no apology for my addition to the large number of papers that I suppose have already been submitted on this important subject. Drying of paper has attracted more attention and investigation of engineers with a wider divergence of opinion than any other operation of the paper making process.

While its importance is recognized by the Technical Association I believe we will do well to keep it before us for further investigation for the mutual advantage of ourselves and the companies we may represent. The perspective I would have you take of this would be the paper maker's. While we may all be agreed that no mill could imagine they have economical and efficient drying, unless they are equipped with some of the modern installations that claim efficient performance of drier part and a correcting factor in machine room ventilation, I would suggest that there are mills without a modern drying system, and without a recovery system that are operating with as much efficiency as some with these systems installed. Of course, I do not say it is the fault of any system that may be installed, but I wish to emphasize the importance of other factors in the efficient drying of paper.

I know of machines that have had none of these drying systems well known to us all, but just a common supply header and a common exhaust to a hot well in boiler room, and like most machines, their productive capacity was limited to the evaporative power of the drier part. When the speed was increased nearly 200 feet on the same grade of paper, there was no system put in but changes were made in drier felts and greater efficiency obtained from the presses by change in wet felts and position of press rolls, right density and crown, continuous felt cleaners and effective doctors on the driers, also new syphons in driers. I know of machines that have dried more paper before the installation of a drying system than after. I know, however, of many more that have increased the productive capacity of their machines by the installation of one of those systems. Therefore, while I would advocate the installation of some system on every machine that is simple and effective in the supply and removal of steam and condensate, getting the most out of the steam with recovery of heat from radiation losses in the machine room as essential for the economic working of any mill. I want to show that all the credit is not always due to reconditioning of the machine at the time of installation and the adoption of standards or technical control in the mill.

Fuel Values

I just mentioned that the objective of any drying system was to get the most out of the steam. Would it be out of place in this paper to consider also coal consumption? It must be just as important to get the most out of our coal as it is to get the most out of our steam. Sometimes we hear of comparisons being made between one mill and another in tons of coal consumed and tons of paper made. Unfortunately we know it is very easy to double the coal consumption without obtaining any increase in production of paper. Efficiency involves economy, and it is economy when the drying system returns to the feed water system, the condensate at a temperature of 200 deg. F. or over, but where is the saving, unless there is technical control in your boiler room? There are today mills buying coal of an unknown moisture content, which requires heat to remove it before combustion can take place, and unknown calorific value, fed to fires by hand and the smoke stack resembles a giant fountain pen advertising the mill's losses on the sky in dense black volumes. While I do not think today comparison between any two mills would be fair, to speak of tons of coal against pounds of paper made, I do think that every mill should ascertain the value of its fuel and confine its purchases to a standard calorific value, ash content, etc., and compare its daily, weekly and monthly consumption of coal against the production of paper. It would lead to a constant checkup on other conditions that would help to eliminate difficulties other variables in the mill, such conditions related to radiation loses, scale, makeup water and temperature of feed water and evaporative power of coal.

Radiation Losses

Radiation being one of the chief losses, due to exposed boiler and pipe surfaces, the estimated losses therefrom are interesting. For example, 100 feet of 6 inch pipe without insulation carrying steam at 200 pounds pressure, the approximate loss per month is $36.00; at 160 pounds it is $32.00; at 120 pounds it is $29.00 and at 80 pounds it is $25.00. Since in the final analysis in some mills it is so much coal consumed against so much paper made, its relationship to efficient drying is in this case direct, but only as an indirect relationship to the efficient drying of paper where pounds of steam are reckoned against pounds of paper made. Whether direct or indirect, the elimination of waste in our fuel demands consideration. Take a coal of a calorific value of 13 to 14 thousand B.t.u. per pound, with a calculative or theoretical evaporative power of 13 pounds steam from water at 60 deg. F. and 15 pounds from water at 212 deg. F, from boiler trials and in actual working conditions we have from that same coal 8 to 9 pounds steam and evaporative power calculated from calorific value is 13 to 15 pounds of steam. The actual evaporative power is only 8 to 9, or one-third if lost, the losses being accounted for by radiation of boiler surface, low temperature of feed water, scale, etc. It is important that we consider this end, just as much as the elimination of any waste in our steam or condensate which must obtain if we are operating without a modern drying system.

Another factor of equal importance is the uniformity of our raw stuff. Mills that manufacture their own pulp could adopt and maintain their own standards and eliminate to a large extent the varying degrees of hydration. Mills buying pulps from various places, the cheapest market very often being the deciding factor, instead of a standard quality, often court trouble. These pulps being subject to the same treatment in beaters and jordans will find as an effective variable a pulp that is easily hydrated which has been subjected to the same treatment as a pulp that offers more resistance.

Stock Temperatures

We know we can increase the water removal by increasing the temperature of the stock. This applies to the wire as well as to the presses. I have obtained a very good illustration of this on a very old machine, making an 18 pound waxing and running at the speed of 270 feet per minute 18 pounds waxing was as much as the machine could dry and there was plenty of back lash between the presses. I had a small drier placed between the first and second presses over which paper was passed with sufficient steam in it to make the sheet stick to the driers and retard its passage through the press. It would observe the back lash. In addition to eliminating cracks and wrinkles and breaks in the driers I found the paper dried easier and was able to increase the speed from 270 to 350 feet per minute. Incidently I increased the efficiency of the second press and presented to driers, a drier sheet than before. Since then I installed a smaller drier on an-

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Paper Manufacture Committee.
[1] Member TAPPI, paper maker, Crown-Willamette Paper Company, Camas, Wash.

other machine between the second and third presses to give the sheet a temperature of 74 to 80 deg. F. When we consider that for every ton of paper made nearly two tons of water have to be evaporated and 1.28 pounds of steam at 10 pounds pressure is required to evaporate one pound of water at 60 deg. F. Since 1.28 pounds steam represents 1218. 5 B.t.u., and theoretically it only requires 1143. 8 B.t.u., there is a 6 per cent loss due to radiation. Then we assume 2½ pounds of steam at 101 pounds pressure for 1 pound of paper coming on a dryer at 60 deg. F. and 30 per cent dry, this heat is disposed of as follows—to raise the temperature of stock and water to evaporation temperature and to replace losses and radiation and convection. Would it not be an advantage to bring our sheet temperature up to 80 deg. F. and incidentally keep the moisture content lower, instead of 60 deg. F. and 30 per cent dry, have it 80 deg. F. and 38 per cent dry. I wonder what the amount of steam the majority of mills actually used to dry one pound of paper. I know of one machine using 3 pounds steam per pound of paper made and a two machine mill making standard news and kraft that average 4½ pounds steam per pound paper; another two machine mill making specialties average 6¼ pounds. Pre-heating is one of the important factors of efficient drying.

The Presses

Let us consider the press part. There must be a suitable set of presses with proper density and crown to obtain the maximum water removal as economically as possible. The question of how much water can be removed very often depends on the choice of a felt and the method of cleaning it. The continuous method is the best if the felt conditions remain constant. Where it is necessary to shut down and wash the felt, the weights are usually eased off to postpone the event, giving more work to the next press or to the driers. After the felt is washed it usually takes more steam to dry the paper for the next few hours. Changing conditions in the press felt usually mean irregular distribution of moisture across the sheet. The advantage of a continuous felt cleaner is seen in longer felt life, as well as lower and more constant steam demand. Speaking of pressure we should not forget the smoothing press. There might be no appreciable difference in some grades, but for an experiment when convenient, allow your paper to crimp on the doctor. The irregular surface prolongs the drying period and takes more steam. The smoother the drier surface and the smoother the paper, the more effective contact for transference of heat through the drier shell to paper there will be.

Dries Felt

Now we must speak of the drier and drier felts, I would like to give my recommendation of the felt for efficient drying which produces a sheet dried without spot or blemish, no wrinkles or cockles, not slack-sized and giving no drier felt impression. The felt is woolen which gives a better finish to sheet. I may be expressing ideas that are contrary to yours, but they are mine gathered from the book of experience. Woolen felts last longer and do not carry moisture from one end of the section to the other. I have seen some cotton felts actually do this particularly asbestos faced felts.

The Driers

We next come to the driers themselves, which transfer the heat to the paper and not only dries paper but fuse the sizing of a rosin sized sheet. Heat supplied to the drier is used as follow: to heat the sheet, then the water in the sheet, and to evaporate that water and to effect the sizing before he required and final evaporaion is completed. Evaporation temperature is around 150 deg. F., fusion temperature 175 deg. F., when the sheet begins to show resistance to ink. From tests I have made I have found paper to be well sized on reaching 185 deg. F. at the tenth drier with 7 more to follow, and on a lighter weight at the sixth drier the temperature of 190 deg. F. with 40 per cent moisture that is 30 to 35 per cent yet to be extracted. I will, if time permits, deal with the effect of the dryer part on sizing at a later stage, but wish now to bring out the conditions that are adverse to the maximum efficiency in drying.

We are of course only considering drying in the atmosphere and not in a vacuum. Therefore, in addition to the steam required to heat the sheet and water in the sheet and to evaporate that water, we will consider steam to replace the convection and radiation losses from exposed portions of the sheet and drier felts. Losses from the drier felts will correspond to the temperature transferred from the felt and paper driers to them. Steam is required to replace the losses from uncovered parts of a drier, (in the case of paper driers, the exposed circumference is about one-third).

There is also the drier ends continually radiating heat as well as the cooling effect of convection which would be increased by draughts from opening the doors and windows, and can be considered under building losses which will vary with the difference in temperature of machine room and the outside air. If these losses, with the heat that is carried away in the warm air extracted from the machine through the roof by air shaft or exhausting fans, should be more than the amount given out by convection, it will be found necessary to use extra heat to condition the air and prevent condensation, the necessary amount required for this condition could be ascertained from the pressure and quality of steam used. I am sure that any mill that has not yet invested in some kind of economizer for air conditioning, if they would make a thorough investigation for losses in and around the drier part of their machines on a similar line to that indicated in this paper, they would be rewarded by the location of some of the losses with a possible remedy.

Drier parts should be covered as far as possible with allowance made for accessibility to tend machine, to retard radiation as much as possible, provided with some method to exhaust same and make economical use of it by conditioning the air that is circulated around the building. Hot air blasts have proved to be very beneficial when directed to the vapor prockets where sheet festoons between the top and bottom row of driers and its passage through. In fact, on some grades of paper it is almost impossible to manufacture economically without this. One mill I know could not make a rag tissue for carbon paper without cockles and asked for my opinion. I knew the cockles were the result of a vapor pocket between sheet and dryer, so to stop the cockles it was necessary to prevent vapor pockets and hot air blasts were used for this purpose.

Another economy is of course to circulate hot air in and around your bottom drier felts, it being more important to do this where it is least convenient, that is in mills without a basement to their machine. It would increase the drying capacity to have felts hot and dry as they re-engage the damp sheet.

Scale on Drier Surfaces

Scale is very objectionable in our boiler room equipment such as boilers, feed water lines and pumps. To prevent scale it is economy to install what is sometimes expensive and elaborate equipment or use some efficient water softening apparatus. The mill that wants high efficiency from the drier part must regard scale in the machine room in the same light as in the boiler room. You remove from the press roll, by the aid of doctors, fiber and loading plucked from the sheet, you have to clean it from the felt and from the paper leading rolls, otherwise you would add to the number of breaks to the paper. Machines that are not equipped with some efficient doctoring device on the first three or four driers, especially mills making various grades and color on the same machine, are not operating with the average efficiency. A lean polished surface gives better transference of heat which is necessary for efficiency. You can prove this when you have only one drier to dry your paper on, as in the case of

M.G. papers. The more mirror like surface, the more uniform contact of sheet to drier the more rapid transference of heat.

Nickel-faced driers are used for photographic print paper. There the quality of paper and its price would justify the use of the expensive face. I would suggest that some of our engineering friends bring out a new drier with a copper face and the usual cast iron shell underneath the former could be doctored with a wood blade at minimum friction and maintenance with improved conditions, also if possible, this drier should have a false end which would be a non-conductor to obtain the maximum from the heat inside through the shell and eliminate radiation from the dryer end. The maximum cleanliness to the outside of our driers is just as important as the inside.

Siphons

The source of much drying trouble has been attributed to something wrong inside the driers where we have air vent pet cocks, these should be opened before starting up on Monday morning, or after a shut-down that long enough to allow driers to cool off and draw in air. I think every machine should have pet cocks, not only to exhaust air, but to indicate the efficiency of your syphon while machine is running. It is safe, cheap and as effective as a pyrometer for checking up on a syphon. Air being a very effective non-conductor, it is very important that it should be kept out while running if there is any coming in with the steam. Since water provides a very good insulation it should also be removed as fast as possible and where exhaust steam is available, oil should be separated for the sake of the inside of the driers, traps or boilers. Where these three elements are effectively removed, uniform temperature should prevail. There are several drying systems that claim to do this for us and give us drying efficiency but efficiency depends on other factors. While I recommend that every machine should have one of the systems which will have the object to get the most out of your steam and the one you decide is the best is still limited to the performance of the syphon. These all have to be effiecient, otherwise the system won't work, and it is no better than the old type with individual traps, if one gets out of commission by a piece of packing or rust and the drier is half full of water, temperature of course goes down and the sheet gets slack in consequence. You have damp wrinkles, causing cracks and breaks, which is the same as when a syphon breaks off, or a small hole is worn into it. We could say the system depends on the proper function of syphons and the most efficient system is the one that embodies simplicity of operation, minimum working parts, low maintenance, least attention from the operator, automatic control for any desired moisture content and individual drier control of temperature, effective operation in the separation of oil where exhaust steam is used dividing dry part into several sections, maintaining the highest possible temperature of condensate back to boiler in least possible time, means by which condensate can be weighed and temperature recorded for a correct reading of steam consumption per pound of paper made.

Size Fusion

I am satisfied that the sizing is not done in the beater, but is developed in the drier part. A sheet taken from the wet presses containing all that is needed to be sized, if air dried in ordinary temperature possesses very little, if any, resistance to ink. Sometimes you may obtain samples this way and find it resistant to water due to the presence of resinates which do not require fusion by heat necessary for normal papers, resistant to ink and water, whereas the same stuff that is found to be unsized when air dried, will be sized after pressing through the drier part of some other improvised means of fusion. Therefore, I would emphasize the need in future design of machine for specialties, some consideration be given to the sizing effect of the drier part; thereby increasing its utility and efficiency, tappings for pressure and thermometer gauges—three sections, one to take care of the heating up of stock and water gradually; one section to effect fusion and evaporation; and one section to complete evaporation and the bringing down of temperature to prevent rupture of the film created by fusion.

Summary

We will return to the Foudrinier where I have endeavored to point out the requirements for the efficient drying of paper which involves more than a dryer drainage system, more than a recovery system, that utilizes the heat from radiation losses to correct the ventilation, it is very essential we adopt these modern improvements to prevent waste, but they cannot be a cure-all—we must have 100 per cent efficiency from one end to the other, if presses are not doing their share, driers will be handicapped.

In conclusion we can summarize the factors involved in the efficient drying of paper. There must be technical control throughout the entire process of manufacture, taking in all raw stock and fuel, as indicated earlier in this paper. This includes records providing valuable indication of sources of loss by inefficiency. Where this affects steam and power you have the greatest chance for saving. 15 to 20 per cent of the cost of paper making is in the cost of steam. In connection with the paper machine, there must be maximum and uniform water removal by maintenance of maximum efficiency at the couch and presses, the right crown and density of rubber rolls, and suitable felts to present to driers the driest sheet possible. This calls for special mention when we consider the cost to remove one ton of water at the presses is about 14 cents against $1.85 in the driers by evaporation.

Drier felts should be drier felts—not moisture conveyors. Some old machines have no efficient means of drying felts and sometimes the top felt, or the bottom felt is carrying moisture from one end of machine to the other which is distributed to the paper and effects a curl to the sheet. There would be absence of vapor pockets—to eliminate cockling of sheet. Excessive temperature at the wet end is another cause of cockles which can easily be avoided. Vapor gets trapped between the sheet and drier. Cockles from this cause are the most difficult to get rid of. Correct ventilation of machine room must be provided for to effect such conditions as to secure an economic steam demand in the drier part. The drier part should be flexible and adaptable to produce paper with a predetermined moisture content and remain constant. One or two per cent over dry is a loss, and if prevented would be an appreciable saving, and ought to reduce the shrinkage shown in the inventory. Drier temperatures should be graduated and controlled to develop a well-sized sheet, with the minimum amount of size added to beater.

Transmission of Heat

There are three distinct ways by which heat may be propagated or conveyed from one place to another; by conduction, radiation and convection. For example, the loss of heat from a furnace wall entails conduction through the furnace wall to its outer surface and the emission of the heat from the outer surface to the adjacent air by radiation, the latter process being accelerated by convection due to air movement on the outside of the wall.

The quantity of heat transmitted by conduction through the wall varies directly with the area of the wall, the temperature difference between the inner and outer surfaces, the thermal conductivity of the materials composing the wall and inversely with the thickness of the wall. The rate of heat emission from the outer surface is influenced chiefly by the surface temperature, the temperature differential between the outer wall surface and the adjacent air and by the rate of air circulation.

Radiation losses mount very rapidly with a rise in temperature, being, for instance, around 100 Btu per square foot, per hour, at a wall temperature of 100 degrees Fahrenheit, under still air conditions and approximately 1,700 Btu per hour at 500 degrees, under similar still air conditions.

Purchase Of Electric Energy And Steam By The Southern Paper Industry*

By John R. Lester[1] and G. H. Finks[1]

Purchase of steam and electric energy by the paper industry is contingent upon certain general physical conditions which are not necessarily peculiar to the south or Alabama. These conditions, and especially geological characteristics, influence offering of steam and electric service by the electric utility to the paper industry, and a description of the general territory involved will be of interest.

The seven southeastern states lying east of the Mississippi River and south of the thirty-seventh parallel of latitude are divided into five major physiographic areas as indicated in Map 1. It may be noted that the sources of the major rivers of this area are in the Appalachian Mountains and plateaus, and that the Piedmont section is common to four of these seven states. This condition establishes geological characteristics which were of primary importance in the development of the interconnected hydro-electric systems of this territory. The wide range of elevations, soil types, and climate is illustrated by the fact that the highest peak east of the Rocky Mountains is located in North Carolina, that one of these states contains about two hundred different types of soil, and that the growing seasons range from one hundred eighty days a year to three hundred forty-five days a year. These conditions affect greatly the supply of the principal raw material required by the paper manufacturer.

Coal and Forests

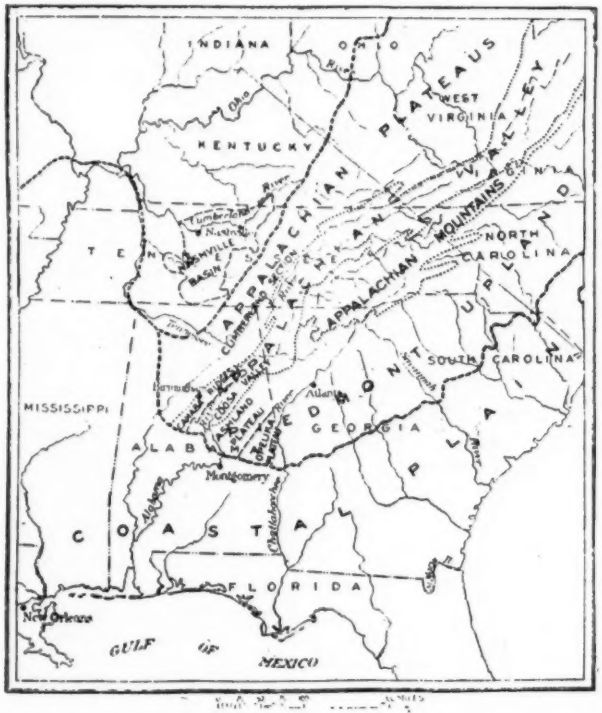
Alabama is located near the center of the southeastern area, and the estimated quantity of bituminous coal in the state is 75 billion tons, the coal fields being shown on Map 2. It will be observed that the Tombigbee-Black Warrior River system connects the Alabama coal fields with the Gulf of Mexico through Mobile Bay. This river system, open to barge navigation throughout the entire year, is one of the world's most important canalized streams and is utilized by the Inland Waterways Corporation (U. S. Government Barge Line) as well as private carriers. The two paper mills in Alabama are located on its banks, and above tide water it affords water for process purposes and for use in condensers of steam electric power plants. At tide water, an ample water supply for process purposes may be obtained from deep wells.

Forest growth by principal types in Alabama is shown on Map 3 and with the exception of the lime soil belt in the central part of the state, nearly 80 per cent of the total area is wooded. There are approximately 23,000,000 wooded acres of land in Alabama, and the present estimated stand is in excess of 90,000,000 cords. Alabama is a large producer of lime stone and lime stone products, Map 4 showing the deposits in the state. The influence of climate is very important, since it affects directly timber regrowth, living cost, and consequent wage scales. Woods operations may be continued throughout the year, and a minimum wood-yard stock is possible. Map 5 shows the normal annual temperatures and rainfalls. It will be noted that with the exception of two small areas, rainfall is not less than 47 inches a year. The growing season averages two hundred forty days a year in Alabama, as compared with one hundred seventy-five days in Madison, Wisconsin, one hundred seventy-two days in Grand Rapids, Michigan, and one hundred seven days in Greenville, Maine.

The elementary factors which have been presented are interesting to the manufacturer of paper in that they have to do directly with location of manufacturing plants, and it is the location that most governs the possibility of construction of steam generating stations by the electric utility.

Steam-Electric Power Plant at Mobile

Hydro-electric power in Alabama is dependent upon seasonal rainfall, although there is considerable storage capacity available. Steam-electric generating plants are required as standby, being operated only at times when a considerable deficiency in rainfall occurs. A number of studies have been made in the past relative to location of standby steam plants adjacent to industries requiring process steam at several locations in Alabama, it being recognized that a standby steam plant offers an advantage when it is in partial operation, maintenance and supervision being simplified and the power plant as a whole being more available for operation during an emergency. Seasonal variation in rainfall results in a surplus of hydro-electric energy at certain times during the year, while at practicaly all times surplus capacity is available at night. The paper mill with its comparatively high load factor makes possible utilization of the surplus hydro-electric energy since the power plant needs to be operated only to supply such steam as may be required in the paper mill, and generation of electric energy at the power plant may be reduced to a minimum. Tabulation 1 shows hydro-electric and steam capacity available in Alabama.



Section on Line A-B

PHYSIOGRAPHIC DIVISIONS OF SOUTHEASTERN UNITED STATES

From "Geology of Alabama."

MAP I

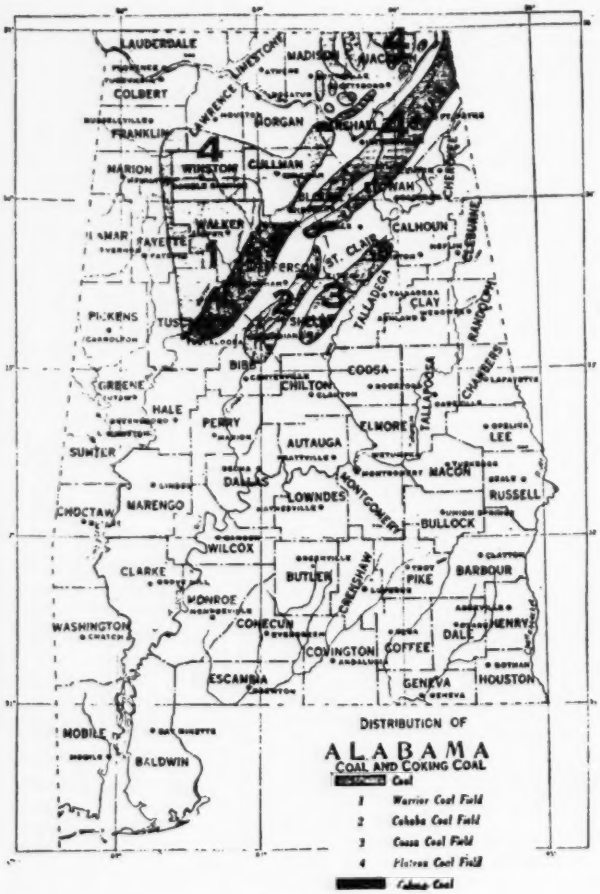
* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Heat and Power Committee.

[1] Alabama Power Company, Birmingham, Ala.

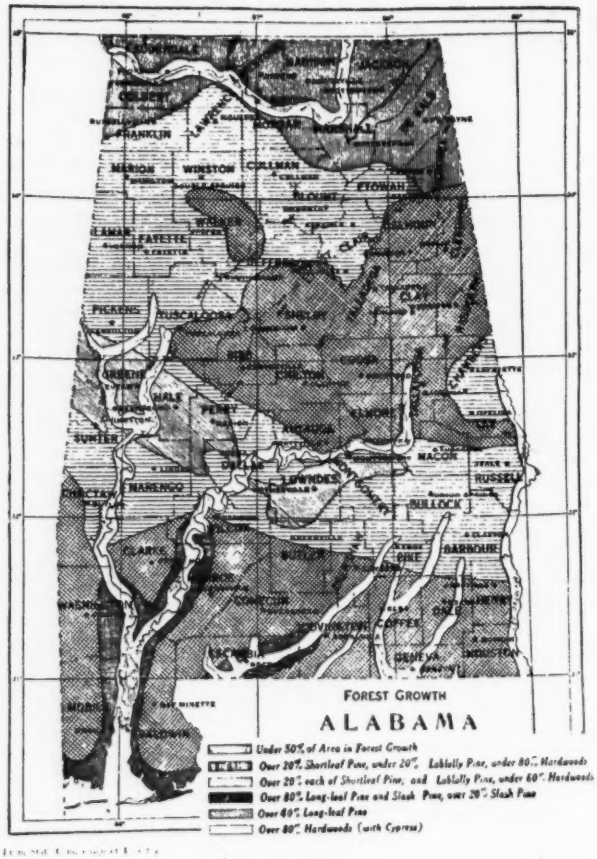
TABULATION 1
POWER DEVELOPMENTS, ALABAMA POWER COMPANY, AS OF DECEMBER 1, 1930

	Horse Power	Kilovolt Amperes
Hydro Electric Plants:		
Lay Dam	110,000	81,000
Mitchell	72,000	60,000
Jordan	144,000	116,000
Martin	135,000	112,500
Upper Tallassee	50,000	38,000
Blewitts	320	300
Lower Tallassee	72,000	58,000
Total Hydro Plants	583,320	465,800
Fuel Electric Plants:		
Gorgas No. 1	100,000	83,333
Gorgas No. 2	80,000	66,667
Gadsden	15,000	12,500
Montgomery Miscellaneous	6,700	6,000
Mobile	5,500	4,750
Miscellaneous Fuel Plants	3,195	2,600
Total Fuel Plants	210,395	175,850
Leased Plants and Purchased Capacity:		
Leased Plants:		
U. S. N. P. No. 2 (Steam) Owned by U. S. Gov't	80,000	70,500
Chickasaw (Steam) Owned by T. C. I. & R. Co.	10,720	10,000
Purchased Capacity:		
Wilson Dam (Hydro) Owned by U. S. Gov't	165,000	150,000
Credille (Hydro) Owned by South Georgia Power Co.	2,250	2,100
Total	257,970	232,600
By reason of contracts with several of its customers the Power Company may under certain conditions, make use of their power stations for the generation of power having a total capacity of	28,040	24,250
Total Generating Capacity	1,079,725	898,500

Practically all hydro-electric power plants are located in the north central part of Alabama, and the necessity for locating major standby steam electric plants adjacent to coal fields has resulted in all large generating plants being located more than two hundred miles from the Gulf coast. A single transmission line



MAP II


FOREST GROWTH
ALABAMA
Under 50% of Area in Forest Growth
Over 20% Shortleaf Pine, under 20% Loblolly Pine, under 80% Hardwoods
Over 20% each of Shortleaf Pine, and Loblolly Pine, under 60% Hardwoods
Over 80% Long-leaf Pine and Slash Pine, over 20% Slash Pine
Over 60% Long-leaf Pine
Over 80% Hardwoods (with Cypress)

MAP III

has been utilized to supply southwest Alabama with electricity for several years. In order to obtain continuity of service, it was recognized that at some future time a standby steam plant would probably be located near Mobile; therefore, when the International Paper Company decided to construct a paper mill at Mobile, a proposal was made by the Southeastern Production Company whereby a power plant would be constructed to supply the paper mill with steam and electric energy, the power plant to be designed as a unit of a future large standby steam plant. Water is available in ample quantities for condensation from a canal adjacent to the plant, which canal may be used for barge navigation. Boiler feed water and process water supply is obtained from deep wells. The estimated power required by the paper mill was 8,000 kilowatts with an annual steam consumption of one billion pounds, steam being delivered to the paper mill in approximately equal quantities at 35 pounds and 150 pounds gage pressure. A power plant, consisting of 3—1300 h.p. boilers and a 7500 kv-a. double automatic extraction turbine, was constructed. A standby turbine rated at 2500 kv-a. was installed to enable the power plant to carry the full paper mill load when necessary. A steam pressure of 450 pounds gage was decided upon. All bark and waste wood refuse is burned in a boiler connected with the power plant. Transformer facilities were provided to tie the steam power plant to the system of Alabama Power Company.

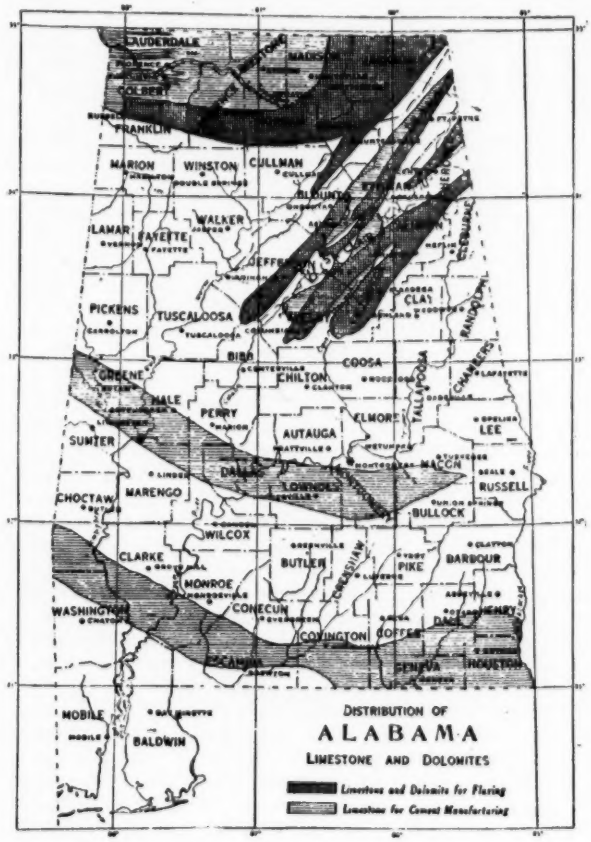
Normal operation of the power plant is with the 7500 kv-a., double automatic extraction turbine operating in parallel with the system of Alabama Power Company and under pressure governing, whereby the load is proportional to the steam delivered to the paper mill. Due to the relatively long transmission line connecting the nearest generating station of Alabama Power Company with Mobile, it was recognized that momentary interruptions would be encountered. To take care of this condition and to prevent total

power failure at the paper mill, a system of relays operated through a frequency relay serves to disconnect that part of the load at the paper mill which may be classed as non-essential during a short interval and to place the turbine on its speed governor. All of this operation is fully automatic and will take care of normal momentary interruptions without serious disturbance to the paper mill operation. Steam pressure regulation is under accurate control, automatic reducing valves being used in parallel with the turbine to insure correct steam pressure in the lines leading to the paper mill at all times. Operation of the power plant is in general similar to those in operation for such service everywhere. Tabulation 2 shows a typical thermal balance for the power plant.

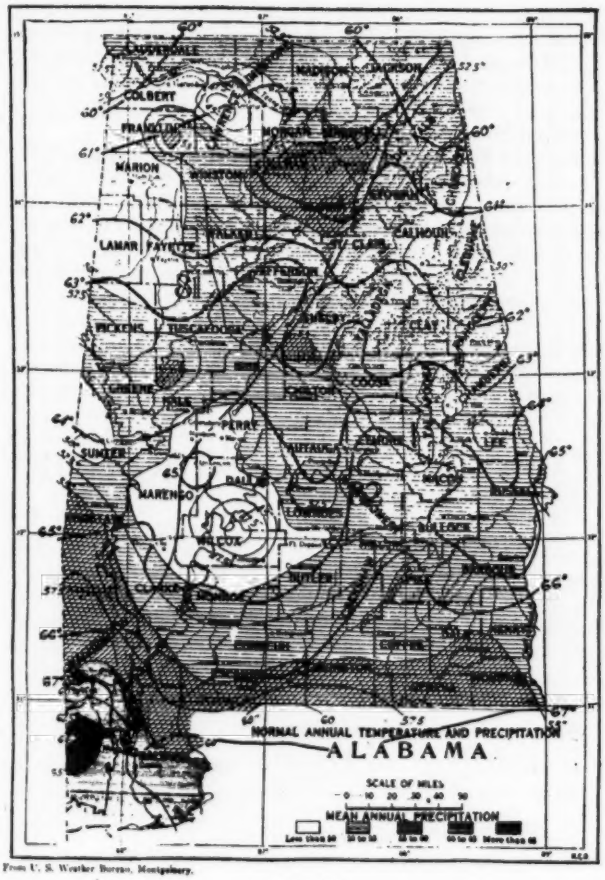
Paper Mill Requirements

Paper mills in general offer the best opportunity for sale of steam and electricity by an electric utility, since they are usually located on water ways and require steam and electricity throughout the year. In the southern states, raw materials for paper mill operation are most available at points distant from present generating plants which makes for favorable location of standby steam plants designed to insure continuity of service; however, there are many elements which affect the possibility of constructing standby steam electric power plants, and it is difficult to deal generally with this aspect.

The increasing availability of equipment for production and utilization of steam at high pressures tends to make the coincident sale of steam and electric energy by the utility attractive, since the cost of such service is to a large extent proportional to the efficiency of conversion of a part of the heat energy in the steam into electric energy before the steam is delivered to the consumer. The cost of fuel at present determines the maximum pressures and since practically all power plants of the type discussed here would



MAP IV



From U. S. Weather Bureau, Montgomery.

MAP V

TABULATION 2
MOBILE POWER PLANT—THERMAL BALANCE

		British Thermal Units Annually
Heat Supplied to Paper Mill by Power Plant:		
554,305,200 lb. steam for process—150 lb. ga.—120 deg. F.S.H.—1264 B.t.u.		700,641,772,800
494,742.000 lb. steam for process— 35 lb. ga.— 20 deg. F.S.H.—1184 B.t.u.		585,774,528,000
		1,286,416,300,800
Electric energy—61,646,172 kwh.—3412 B.t.u.		210,336,738,864
Total heat energy supplied to paper mill		1,496,753,039,664
	British Thermal Units Annually	
Total Heat Energy Required by Power Plant:		
Coal equivalent of bark—14,500 tons @ 26,000,000 B.t.u.	377,000,000,000	
Coal burned—56,450 tons @ 26,000,000 B.t.u.	1,467,700,000,000	
Purchased electric energy—45,210,000 kwh. @ 3412 B.t.u.	154,255,620,000	
Condensate returned—453,000,000 lb. @ 150 deg. F.	53,454,000,000	
Raw water—620,000,000 lb. @ 70 deg. F.	23,560,000,000	
Total heat required by power plant	2,062.969,620,000	
Station service and losses—4,707,840 kwh. @ 3412 B.t.u.	16,063,150,080	
	2,059,906,469,920	
Condensate lost—596,$47,200 lb. @ 272 deg. F.	108,480,590,400	
	1,951,425,879,520	
* Blow down—23,952,800 lb. @ 225 deg. F.	4,622,890,400	
	1,946,802,989,120	
** Combustion losses—24.40 per cent.	450,051,949,456	
	1,496,753,039,664	1,496,753,039,664

* Continuous blow down.
** Includes both bark burning boiler and main boiler plant.

be tied into a network system served from many sources, the value of electric energy also operates to control maximum pressures for which power plants may be designed. Every case encountered has many different aspects, and no fixed rule regarding the supplying of electricity to paper mills by the electric utility can be established.

Purchase of steam and electricity by the paper industry when obtained from a competent and responsible utility, at fair prices, is good business practice since it avoids burdening the paper mill organization with power plant operation. Net incomes in southern kraft mills where steam and electricity may be purchased should show an increase of approximately 3 per cent on the total investment as compared with mills producing all electricity and steam. The fact that the utility, through its diversified sale of power, can afford to construct and maintain power plants on a lower basis of fixed charges than is considered prudent for industrial plants, is responsible for the increase in net income. There is always a definite advantage to any industry requiring electric energy through its being tied into a large network having many sources of generation because of the accuracy of control resulting from the exact voltage and frequency which must be maintained in the network system. This is applicable to manufacturing plants which may generate a considerable part of their energy from process steam.

The probability of rapid development of the paper industry in the south is good. Thus far, practically all paper mills use the sulphate process and produce kraft paper from southern pines. Other woods are available, and it is only a matter of time until other types of paper will be produced. The rate at which reforestation occurs, together with equable climate, offers a very favorable condition for continued growth of the industry and production at reasonable cost. The continued growth of electric utilities indicates that in the future a greater number of standby plants utilizing steam will be required, and all of these plants offer opportunities for purchase of steam and electricity by the paper industry.

Paper Machine Felt Operation*

By R. W. Pattison [1]

A paper entitled "Paper Machine Operation" was presented by L. M. Yoerg and the writer at the fall meeting of the Technical Association at Erie last September. In that paper the statement was made that the production of most machines is limited to their drying capacity. Probably that statement should be changed to "The Production of most machines is limited to the water removal ability of the felts", which inversely affects the drying operation.

It is quite reasonable to assume that if the porosity of the felt were increased that with the same pressure more water would be removed, thereby having less water to be evaporated by the driers. If the machine was up to drying capacity before, it is obvious that the production could be increased.

The necessary texture required will govern the amount of porosity to a certain extent, as it is quite apparent that the more open a felt is the rougher will be the texture. When a press is weighed too heavily there is a danger of felt marking, which of course is very objectionable on fine texture papers.

Cost of Water Removal

It might be well to add at this point that the cost of removal of water by pressure is much less than by evaporation. According to a prominent felt maker, the cost to remove a ton of water at the presses is fifteen cents, while it costs $1.85 to evaporate the same amount. Therefore, it is quite obvious that the presses and felts should receive more attention than they have in the past.

It seems quite simple to increase the porosity of the felts, increasing their water removal ability, and therefore, consume less steam or increase production. But when the porosity is increased, the durability is decreased, so the question arises whether or not you accomplish anything by decreasing felt life for increased water removal. Incidentally, this seems to be in direct proportion, that is, if the porosity is increased say 20 per cent, the felt life will decrease 20 per cent. This decrease in felt life which means increased felt costs, is more than offset by the increased production obtained.

Factors Affecting Felt Life

When one considers that the average felt travels many miles during the course of its life, with the enormous tension exerted, it is quite apparent that the felt rolls should turn very easily as this directly affects the life of the felt.

Needless to say, putting a felt on and running it in is very important. Much of the felt life is sacrificed by improper starting or running in. The felt should be spread evenly in the machine and with all stretch rolls loose. As the felt is running, cold water should be played on it as evenly as possible so that the felt will become thoroughly saturated and will shrink naturally and evenly. If this shrinkage is uneven in any way, trouble will soon develop, with the probable result that the next felt will be specified to be tougher, at a sacrifice to water removal qualities.

With the advent of suction press rolls, felts have had to meet a new evil. Although there is no question that they remove more water, it is quite apparent that the life of the felt will be shortened. I have no data available regarding the effect of suction press rolls on felt life, but if there is anyone who has, I would appreciate his telling us what his experience has been.

Press Roll Crown

The question of proper crown on the press rolls is very important, as it will tend to wear the felt where it pinches the most. For instance not enough crown will cause a pinch in the ends of the felt, and too much crown causes a pinch in the center. A very good way to detect this is by watching the seam of the felt which will show where the greatest pinch is. If the proper crown exists, the seam should be straight across the machine. It is of course obvious that the sheet of paper made under improper conditions will cause all kinds of trouble, because the uneven pressing causes uneven drying.

Work has been started to try to set up a factor that, when applied to the history of a felt, will show its efficiency. The production of paper, divided into the cost of felt, is all most of us want, as it tells us our approximate felt cost per pound of paper.

Tension exerted upon the felt affects its water removal ability. This tension, of course, varies, as most machines are equipped with hand operated wheels with which to take up the slack as the felt stretches while running. I understand that there has been patented a device to measure this tension. Such a device would eliminate an important variable, and would tend to give us more even tension, and therefore, more even water removal.

In conclusion we might add that when steam demands increase, it would probably be worth while to give some attention to the presses, as therein lies the basis of efficient machine operation.

I would appreciate very much if anyone who has had any experience with felt conditioners will tell us what this experience has been regarding felt life.

It is the object of the Paper Manufacture Committee to suggest for adoption by this Association standard practices regarding the operation and handling of felts, and with this in mind we are planning our work for the coming year.

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Paper Manufacture Committee.

[1] Junior member TAPPI, asst. supt., American Writing Paper Company, Holyoke, Mass.

Determination of Alpha Cellulose*

A Tentative Standard Method

Adapted and modified by William R. Willetts [1]

The following detailed set of specifications for the determination of alpha cellulose is an attempt to formulate a procedure which is accurate and sufficiently simple so that it may be used as a routine test. The method herein described is adapted from the tentative standard Method IV of the American Chemical Society (Ind. and Eng. Chem. Anal. Ed. Vol. 1, No. 1, p. 54, January 15, 1929) and is the most successful method investigated by the Division of Cellulose Chemistry of that Society.

I. Test Specimen

The usual precautions for sampling pulp should be rigidly followed. The samples are cut into approximately 0.5 inch (1.25 cm.) squares if material is in sheet form. No cutting is required if the fibers are in an open, fluffy form by being brushed apart mechanically while in the air dried condition. They are stored in air-tight glass stoppered containers or fruit jars for at least 48 hours to attain a uniform moisture content throughout the material. Samples for moisture content and alpha cellulose determinations are withdrawn as needed.

II. Procedure

Approximately a 3 gram sample weighed accurately in a weighing bottle is transferred to a 250 c.c. Pyrex beaker. Thirty-five c.c. of 17.5 per cent carbonate-free sodium hydroxide solution (17.5 grams of sodium hydroxide in 100 grams of solution) (20 deg. C.) is added, and the whole allowed to stand for 5 minutes. The pulp is macerated for 10 minutes with a short rod which has the end flattened to a disc 1 cm. in diameter. During this maceration 40 c.c. of 17.5 per cent sodium hydroxide (20 deg. C.) are added intermittenly in 10 c.c. portions. The beaker is then covered with a watch glass. After 30 minutes additional macerizing action in a water bath at 20 deg. C. (total mercerization time 45 minutes) 75 c.c. of distilled water (20 deg. C.) are added to the alkali-cellulose mixture with thorough stirring. The contents of the beaker are then filtered immediately by means of suction on a 40 c.c. Gooch crucible, having a finely perforated bottom, allowing the cellulose to form its own mat. The filtrate is poured through the mat a second and a third time, if necessary, to catch any fine material. The residue in the Gooch crucible is washed with exactly 750 c.c. of distilled water (20 deg. C.) by means of suction. The suction tube is disconnected and 40 c.c. of 10 per cent acetic acid (20 deg. C.) are added and allowed to soak for 5 minutes. Suction is then applied to remove the acid. The alpha cellulose is washed with distilled water (20 deg. C.) until free from acid. The alpha cellulose is carefully removed from the Gooch crucible to a tared, flat, glass-stoppered weighing bottle which is opened and dried at 105 deg. C. to constant weight, that is, the first constant consecutive weights obtained after 1 hour heating intervals following an initial drying of 6 hours. The weighing bottle and its contents are allowed to cool in a desicator for 30 minutes and then weighed. (Drying of the alpha cellulose can be greatly expedited if the last washing is followed by petrolic ether or some other highly volatile non-reacting liquid. In each case these are allowed to soak into the sample for several minutes before being removed by suction. In this way the time in the oven at which constant weight is reached may be cut down to about 2 hours instead of 6 hours or more. The results of the two drying methods check each other within the experimental limits of the procedure).

III. Modification for Unbleached Pulps

In the case of unbleached chemical wood pulps the alpha cellulose figure should be corrected for any lignin remaining in the residue after mercerization. The following method was developed at the United States Forest Products Laboratory, Madison, Wisconsin (Cf. Paper Trade Journal, Vol. 87, No. 25, December 20, 1928, page 61).

Two (2) grams of the residue from the mercerization test are treated with 40 c.c. of 72 per cent (by weight) of sulphuric acid and the digestion allowed to proceed at room temperature for 16 hours. The solution is then transferred to a liter Erlenmeyer flask and diluted with 1570 c.c. of water, covered with a watch glass and boiled for 2 hours, maintaining a constant level by the addition of more water. The residue is then filtered through a tared Gooch or frittered glass crucible washed with hot distilled water and dried to constant weight at 100-105 deg. C. The alpha cellulose figure is corrected by subtracting the percentage of lignin residue thus obtained.

IV. Reporting

All reports are made on the oven dry basis to hundredths of a per cent.

V. Notes on Method IV.

(a) Preparation of sodium hydroxide solution: The sodium hydroxide solution is prepared by dissolving sticks of alkali in an equal weight of water, and allowing it to stand 10 days for the sodium carbonate and impurities to settle. The clear, supernatant liquid is decanted and diluted with carbon dioxide-free water until its density at 15 deg. C. is 1.197. Such a solution contains 17.5 ± 0.1 grams of sodium hydroxide per 100 grams of solution.

(b) Time interval for steps in the procedure: An interval of 15 minutes should elapse between the times of starting the alkali treatment of the individual triplicate samples. Such a procedure allows time before proceeding to the next sample in a triplicate determination for the various steps in the procedure, such an impregnation, maceration, filtration, and partial washing.

If 5 minutes are allowed between the addition of a part of the alkali and the beginning of maceration, it will be found that sulphite pulp swells to five or six times its original volume, and the fibers can be much more easily macerated. The remaining 10 minute interval, during which the remaining 40 c.c. portion of the alkali is added, making a total of 75 c.c. has been found ample time for the maceration of pulps. With such a scheme, for example, one would add the alkali to the samples at 9:00 o'clock, 9:15, and 9:30, respectively. Filtering would begin at 9:45 o'clock, 10:00, and 10:15, respectively.

(c) Filtering Medium. Jena glass filter crucibles (coarse) may be used in place of the Gooch crucibles specified in the directions.

(d) Testing for Acidity. To test the acidity of the wash water on litmus paper, the last few drops removed after the addition of water should be used.

VI. Accuracy

Duplicate samples should check each other to within 0.2 per cent.

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Steam Consumption in the Drying of Paper*

By Frederick W. Adams[1]

Steam consumption and drying costs are two subjects of primary importance in the operation of any paper machine. The determination and reduction of drying costs is of great interest to the technical and operating men in the industry. Since steam cost is a major factor in determining total drying cost an accurate measurement of steam consumption is necessary for the efficient operation of existing equipment or to the intelligent choice of new equipment.

A comparison of the results of various mill tests, unless attacked with considerable caution, may easily lead to entirely erroneous conclusions. The variety of equipment, of methods of operation, and of means of expressing operating results demands a thorough study to yield satisfactory operating or cost data. Probably the most common pitfall in the field of drying is encountered when one starts to talk of the efficiency of a drier. The drying operation, when viewed from the point of view of steam economy, must include not only all of the steam fed to the drying rolls, but also all of the steam required to supply heat to any part of the drying operation. This must necessarily include the steam required to keep the machine room at a suitable working temperature, either by direct radiation from coils or as heat supplied to the ventilating air. It is illogical and meaningless to talk of the thermal efficiency of a drier apart from the consideration of heat requirements of the machine room. The drier is an integral part of the machine room and its effect on steam consumption is tied up with the operation of the room. The whole picture is essential to a rational analysis of steam consumption in the drying of paper.

Gross Heat Requirements

Following the outline in the paper presented before the Technical Association in February, 1930, on "Heat Requirements for Machine Rooms,"[2] the items entering into a discussion of steam consumption have been summarized:

Gross Heat Requirements:

- A. Wet end evaporation
  - (1) Latent heat of evaporation
  - (2) Sensible heat in carrying air
- B. Heating fiber and water to evaporation temperature
- C. Evaporation on driers
  - (1) Latent heat of evaporation
  - (2) Superheat in vapor
  - (3) Sensible heat in carrying air
- D. Sensible heat in fiber and residual water
- E. Radiation and convection losses

Heat Recovery:

- F. Latent heat of condensation of water vapor plus sensible heat in carrying air and vapor
- G. Sensible heat in product

Net heat requirements = gross heat requirements — heat recovery

Steam consumption is then expressed as the pounds of steam equivalent to the net heat requirement per ton of paper produced.

The theoretical steam consumption of three types of machine room and drying equipment have been calculated in Table I, in accordance with the above outline. Calculations have been made for hooded machines with no heat recovery, for hooded machines with heat recovery equivalent to 60 per cent[3] of the heat necessary to raise all the supply air from outdoor temperature to the temperature of the exhaust vapors, and for vacuum machines operating at a 28-inch vacuum. Since the use of heat units (B.t.u.) simplifies the calculations, the results are expressed on this basis. Two 234-inch machines in one room, operating at 813 feet per minute and producing 32-pound standard news print were considered in each case. All calculations have been made on a time basis of one hour, assuming no breaks or interruptions in operation. Machine room sizes and construction have been taken to correspond to the latest standard practice for hooded and for vacuum machines. Other general operating conditions used are included in Table II.

TABLE II

MACHINE ROOM CONDITIONS FOR CALCULATION OF STEAM CONSUMPTION

Moisture content of paper entering driers = 32 per cent dry
Moisture content of paper leaving driers = 7 per cent wet
No time down; no breaks in sheet or broke produced
Trim = 1 inch
Building construction: walls of 8-inch tile and 4-inch brick; roof of 5-inch gypsum slab
Two 234-inch machines in one room, running at 813 feet per minute
Wet end evaporation = 15 per cent of evaporation on the driers
Machine room temperature = 80 deg. F.
Slush stock temperature = 60 deg. F.

The results have been calculated for outdoor temperatures of 0, 40 and 70 deg. F. They show that for an outdoor temperature of 40 deg. F. by control of ventilation in a machine room with hooded machines a theoretical steam consumption for these conditions of 6,990 pounds of steam per ton of paper may be obtained.

TABLE I—HEAT REQUIREMENTS AND STEAM CONSUMPTION OF VARIOUS HYPOTHETICAL MACHINE ROOMS

VARIOUS HYPOTHETICAL MACHINE ROOMS

	Outdoor Temperature = 0° F.			Outdoor Temperature = 40° F.			Outdoor Temperature = 70° F.		
	Hooded Machine			Hooded Machine			Hooded Machine		
	Without Recovery	With Recovery	Vacuum Machine	Without Recovery	With Recovery	Vacuum Machine	Without Recovery	With Recovery	Vacuum Machine
Gross Heat Requirements:									
A1 Latent heat of wet end evaporation	5.78	5.78	5.78	5.78	5.78	5.78	5.78	5.78	5.78
A2 Sensible heat of wet end carrying air	....	....	6.62	....	....	4.18	....	....	2.56
B Heating fiber and water to evaporating temperature	5.14	5.14	1.74	5.14	5.14	1.74	5.14	5.14	1.74
C1 Latent heat of evaporation on driers	35.07	35.07	37.70	35.07	35.07	37.70	35.07	35.07	37.70
C2 Superheat in vapor from driers	—1.19	—1.19	.66	—1.14	—1.14	.66	—1.04	—1.04	.66
C3 Sensible heat in carrying air	27.74	27.74	.45	17.58	17.58	.32	10.94	10.94	.22
D Sensible heat in fiber and residual water	.16	.16	.72	.16	.16	.72	.16	.16	.72
E Radiation and convection losses from room	4.99	4.99	4.11	2.63	2.63	2.17	.87	.87	.72
Total Gross Heat Requirements	77.69	77.69	57.78	65.22	65.22	53.27	56.92	56.92	50.10
Heat Recovered:									
F Latent heat of condensation of water vapor plus sensible heat in carrying air and vapor	0	16.56	0	0	10.45	0	0	6.50	0
G Sensible heat in product	.87	.87	.87	.87	.87	.87	.87	.87	.87
Total Heat Recovered	.87	17.43	.87	.87	11.32	.87	.87	7.37	.87
Net Heat Requirements	76.82	60.26	56.91	64.35	53.90	52.40	56.05	49.55	49.23
Steam Consumption: Pounds steam per ton paper	8,350	6,550	6,190	6,990	5,860	5,700	5,990	5,390	5,350

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Heat and Power Committee.

[1] Asst. professor of chemical engineering, Massachusetts Institute of Technology, Cambridge, Mass.

[2] Technical Association Papers, Series XIII, p. 260.

[3] This percentage of heat recovery is a fair average of several tests conducted on machines equipped with Briner Economizers.

Recovery of heat equivalent to 60 per cent of the sensible heat carried off by the ventilating air is obtained with economizers on a hooded machine and reduces this steam consumption to 5,860 pounds of steam per ton of paper. Elimination of a large proportion of the ventilating air is accomplished in a vacuum drier room with a consequent sacrifice of heat recovery, but with a resulting steam consumption about equal to that in a hooded machine room, namely 5,700 pounds of steam per ton of paper.

The most striking fact in connection with these results is that the calculated steam consumptions are so much lower than the operating man is able to show on monthly averages. Even the results of tests in well operated mills give steam consumptions varying from 6,000 to 10,000 pounds of steam per ton of paper.

An analysis of the conditions which form the basis for calculation will show how these theoretical results may be applied to actual operating conditions. It will also explain the wide discrepancies in published information on steam consumption in machine rooms.

Paper Machine Operating Factors

The operation of a paper machine is usually limited by several very important factors which have a large effect on steam consumption. These factors are:

1. Moisture entering the driers
2. Moisture leaving the driers
3. Per cent of time machine is down
4. Per cent of time broke is being produced
5. Per cent of trim
6. Physical construction of the machine room
   - (a) Number of machines in room
   - (b) Length of machine
   - (c) Wet end construction
7. Steam measurement
   - (a) Precision of measurement of steam flowing
   - (b) Bypassing and losses

The moisture content of the sheet entering the driers varies widely with different machines and may vary appreciably even on the same machine. Poor mechanical removal of water by the couch, presses and felts puts a heavy burden on the driers. Continual attention to the entering moisture content will afford control of the amount of evaporation required on the driers. Tests on a news print machine running at 1,020 feet per minute show variations in entering moisture between 28.9 and 30.4 per cent dry. A change in moisture content from 32 to 30 per cent dry will cause a net increase in steam consumption of 400 pounds of steam per ton of paper for the open machine room or vacuum machine room. The increase for a hooded machine room will be somewhat less than 400 pounds of steam per ton of paper on account of a simultaneous increase in heat recovery.

The final moisture content of the sheet may show variations of between 5 and 9 per cent, but the effect on steam consumption is less marked. A drop from 7 to 6 per cent corresponds to an increase in steam consumption of about 42 pounds of steam per ton of paper.

The operating efficiency of a machine may be measured by the per cent of time that salable paper is being produced. This is, of course, dependent on the amount of time when the machine is down and the amount of time when broke is being made. When broke is coming off the machine, the steam consumption will continue at the same rate, but since no salable paper is being produced this steam must be charged to paper sold, with a resulting proportional increase in steam consumption. When the machine is down the heat required to warm stock and evaporate water on the driers is eliminated, but the other heat requirements must be met. Consequently, while this will cause an increase in steam consumed per unit of production, the increase will be less than corresponds to the percentage of the time down. These two items taken together probably represent the largest single factor in boosting steam consumption. A recent notice in the Pulp and Paper Magazine tells of a record of 52 hours of continuous production on a 234-inch machine running at 1,000 feet a minute. Contrast this with the production of a similar machine under average operating conditions. Comparison of records confirm that 90 per cent operation of a paper machine is very good performance.

Trim offers another possibility for materially increasing steam consumption. Steam consumption will increase proportionally with trim. While it is desirable to reduce trim to a minimum, it often runs as high as seven per cent on some orders in a modern mill. This is equivalent to an increase in steam consumption for a hooded machine room without recovery of about 525 and for a hooded machine room with recovery of about 440 pounds of steam per ton of paper.

The machine which set the 52 hour record mentioned above was producing 140.16 tons of paper per day requiring the drying of 141.44 tons. The average capacity obtained over a two-day period on a similar machine with unfavorable trim, time down, and breaks was about 80 per cent of what it would produce with a two-inch trim and without time down and breaks. This corresponds to a production of 113.15 tons at the same speed. The effect of these factors alone; trim, time down and breaks would result in a steam consumption more than twenty per cent greater than in the record run.

The physical construction of the machine room may affect steam consumption to an appreciable extent. Radiation and convection losses account for about four to five per cent of the steam consumption in a two-machine room. Placing a larger number of machines in a room reduces these losses very slightly since wall losses account for only about 20 per cent of total radiation and convection losses. Protected walls similarly only have a slight effect on these losses, although their value is greater in cold weather. Materials of construction are important, but generally are standard on newer installations.

Machine dimensions affect radiation losses in almost direct proportion. It will be found, however, that machine room height and width for a given width machine are reasonably uniform. Lengths on the other hand vary greatly. The distance between the breast roll and first drier on two machines designed for the same capacity may vary by as much as 25 per cent. The drier section on a vacuum machine is materially less than on an open machine. The room available for calenders, rewinders, and handling finished paper also varies. Owing to the relatively small magnitude of radiation and convection losses, the effect of variations in machine room length on these factors will at the outside only account for a differential in steam consumption of 100 pounds of steam per ton of paper.

Accurate data on wet end evaporation are meager, but indicate a probable range of from 5 to 30 per cent of the water evaporated on the driers. Wet end construction is undoubtedly an important factor in controlling wet end evaporation and its accompanying heat requirements.

The method of measuring steam input to a machine room offers possibilities of inaccuracy and while it does not affect actual steam consumption, it does determine the measurement of it. Steam is usually metered where it enters the machine room to feed the driers. Steam flow meters if kept in good repair may be generally relied upon to indicate and record the volume of steam passing. They cannot show how much live steam is getting through the driers or heating system without condensing. As this steam usually returns to the boiler plant for heating feed water it is not lost, but may be charged against the machine room instead of the steam plant. This bypassing may be due to leaky traps or to an intentional bleeding to remove non-condensable gases from the driers. Unless careful tests are made to check the system, this loss may run to ten per cent or more of the total heat requirements.

A common error is to calculate steam consumption on the basis of steam fed to the driers alone, neglecting steam used in radiation coils, air heaters or for heating air in other rooms before it enters

the machine room. Steam supplied at these auxiliary points is essential to the drying operation and if omitted would require an equivalent increase in steam fed the driers. This usually amounts to ten per cent or more of the total heat requirements.

The relative effect of these various factors in a hooded machine room without recovery is illustrated by Table III, in which is listed the amount of change in each factor required to produce an increase in steam consumption of 400 pounds of steam per ton of paper. The effect of changes in moisture content of paper leaving the driers and of machine room length is so slight that a 40 pound change has been used for these items.

TABLE III

EFFECT OF OPERATING CONDITIONS ON THE STEAM CONSUMPTION OF A HOODED MACHINE ROOM WITHOUT RECOVERY

	Value used in calculations	Value for an increase in steam consumption of: 400 lb./T	40 lb./T
Moisture entering driers: per cent dry..	32.0	30.0	....
Moisture leaving driers: per cent wet..	7.0	....	6.2
Time machine is down: per cent.....	0	13	....
Time broke is being made: per cent....	0	5.4	....
Trim: per cent	0.5	5.9	....
Length of machine room: feet.....	326	....	372
Steam bypassed or lost: per cent.....	0	5.4	....

Discussion of Results

All of the results discussed in this paper have been based on a constant outdoor temperature. It is realized that a change in outdoor temperature will affect steam consumption and that for extremely high or low temperatures this effect may be large. On the other hand, the effects discussed (Table III) for the factors which are within the control of the operator hold true regardless of outdoor temperature. Machine room length is not within the control of the operator and since it is tied in with radiation losses, the magnitude of this effect will vary with temperature.

To better illustrate the applicability of these results, the steam consumption of a hypothetical machine room will be calculated. The following conditions may be assumed to exist in this machine room:

Moisture entering driers	28.4 per cent dry
Moisture leaving driers	5.1 per cent wet
Time machine is down	11.4 per cent
Time broke is being made	4.2 per cent
Trim	5.6 per cent
Steam bypassed	3.2 per cent
Outdoor air temperature	40 deg. F.
Machine speed	813 feet per minute

Two 234-inch machines in one room; machines hooded, but not equipped for heat recovery.

Referring to Table I, it will be noticed that the steam consumption for the hooded machine, without recovery and with an outdoor air temperature of 40 deg. F. is 6,990 pounds of steam per ton of paper. To this theoretical figure for steam consumption calculated for the conditions specified in Table II must be added the steam requirements to satisfy the actual operating conditions.

The results are calculated by determining the theoretical steam consumption for the moisture limits specified[4] and correcting this by the following formula:

$$\frac{\text{(Theoretical Steam Consumption)}\ \left(1 + \frac{.4(\%\ \text{Time Down})}{100\%\ \text{Time Down}}\right)}{\left(1 - \frac{\%\ \text{Broke}}{100}\right)\left(1.005 - \frac{\%\ \text{Trim}}{100}\right)\left(1 - \frac{\%\ \text{Steam Bypassed}}{100}\right)}$$

This yields an actual steam consumption for these conditions of 9,535 pounds per ton of paper. The increases in steam consumption are divided approximately as follows among the various factors:

Theoretical steam consumption (from Table II)....	6990	pounds per ton
Entering moisture correction	+ 796	
Leaving moisture correction	+ 150	
Time down correction	+ 441	
Broke correction	+ 374	
Trim correction	+ 499	
Steam bypassed correction	+ 285	
Actual steam consumption	9535	pounds per ton

[4] This calculation is carried through in the following manner: The evaporation will be 2.34 pounds of water per pound of paper dried, as compared with the theoretical of 1.91. This will increase the requirements of items B, C1) and C2) from a total of 51.51 to 60.21 million B.t.u. per hour, with an equivalent increase in steam consumption of 946 pounds per ton of paper.

The actual steam consumption for this case of 9,535 pounds of steam per ton of paper represents an increase of 2,545 pounds per ton over the theoretical figure of 6,990. Since extreme conditions of operation have not been chosen for these calculations, it is evident that large variations in steam consumption will occur in practice, and that these variations are mainly due to differences in the operating conditions discussed.

Patents Committee Annual Report

The patents committee was instituted under the Technical Association's new divisional organization to round out the activities of the association and to fill a long felt need among technical men engaged in the pulp and paper and related industries. Its purposes have been stated as follews:—

Objectives

1. To cooperate with the patent committees of other technical associations as well as with those of law association in improving the patent system.

2. To watch the patent situation including legislation and decisions of patent tribunals insofar as they may affect the protection of inventions relating to the pulp and paper industry and to keep the members of the association informed thereof.

3. To give from time to time information to enable the members to avail themselves to the fullest extent of the good features of the patent system and to avoid the many obstacles and pitfalls.

4. To present from time to time discussions of a general nature relating to patent matters of particular interest to the paper industry.

In its first year of existence, the committee has devoted the greater portion of its time to preparing bulletins covering essential information for the protection of inventions and discoveries. Six bulletins have already been prepared, of which five have been published. The wide interest in the work of the committee is evidenced by the fact that the bulletins are being published not only in the leading paper trade magazines of this country and Canada, but also in the Textile World and the Journal of the Patent Office Society.

Bulletins Published

For ready reference, the titles of the bulletins are given at this point:

TAPPI Appoints Patents Committee—Published as Editorial on page 62 of the Paper Trade Journal of Aug. 7, 1930.

Suppression of Inventions—Published on page 41 of the Paper Trade Journal of Aug. 28, 1930.

Trade Secrets—Published as Editorial on page 48 of the Paper Trade Journal of Nov. 13, 1930.

Patent Protection—Published on page 55 of the Paper Trade Journal of Nov. 27, 1930.

Trade-Marks and Slogans—Published as Editorial on page 48 of the Paper Trade Journal of Dec. 11, 1930.

The Importance of Securing Patent Protection—Not yet published.

Committee Plans

During the coming year the committee intends to cover all phases of the patent system, so that its bulletins will form a reference library of authentic patent information. As soon as this task is completed, active work will be started on a program for the improvement of the system. The first step in this work consists of a letter of cooperation approved by the executive and patents committee and read before the patents section of the American Bar Association at its annual convention in Chicago last August. The committee feels that without the cooperation of all those interested in inventions and their protection, no attempt to improve the system can possibly succeed.

C. W. Rivise, Chairman

Water Purification for Color Removal*

By A. S. Behrman,[1] R. H. Kean,[2] and H. Gustafson [3]

The color of the water used in making certain grades of paper is obviously an important factor in determining the quality of the finished product; and standards in this respect are becoming increasingly rigorous and exacting. With many paper mills located in regions of highly colored surface waters, the paper industry has always been keenly alive to the necessity for the purification of colored waters, and as keenly interested in developments and improvements in methods of color removal.

The twofold object of this paper is first, to describe briefly the most advanced methods of color removal now practiced; and second, to present some of the results of an investigation made into the nature of the coloring matter in water and into new methods of removal based on these results.

Present Methods

The improvements in methods of color removal in the last ten years have come about almost entirely as a result of the advances in the art of water filtration in general—in fact, color removal is ordinarily considered as one special case of water filtration. Accordingly, the modern plant for color removal is essentially a filtration plant, and as such includes the usual provisions for coagulation, sedimentation, and sand filtration, with particular emphasis on coagulation.

Undoubtedly the most important advance in water filtration in the past decade has been the discovery and utilization of the importance of pH on coagulation. By coagulation, as applied to water purification, we mean of course the collecting of the particles of finely divided suspended matter into clumps or aggregates that are large and heavy enough to be removed by sedimentation or at least sufficiently large to be retained on the surface of a sand filter. This result is accomplished in general by adding to the water a coagulant which will react with the water to produce particles of a gelatinous substance—aluminum hydroxide, for example—capable of gathering together the finely divided suspended matter. It was formerly thought that since an acid-reacting coagulant such as aluminum sulphate required some sort of alkalinity to react with it, all that was necessary was to have present in the water a safe excess of alkalinity. If this excess was not provided by the natural alkalinity of the water, then artificial alkalinity must be supplied; and for this purpose there were used lime, sodium carbonate, calcium carbonate, and other sources of alkalinity, not entirely promiscuously, but certainly with little or no appreciation of the fundamental considerations involved.

We know now, as the result of the researches of Clark, Langelier, Baylis, Buswell and other investigators, that the old conception was in many cases entirely wrong, and that the excess alkalinity added to facilitate coagulation frequently defeated its own purpose. It has been proved, for example, that in the case of aluminum sulphate optimum coagulation usually occurs in a pH range definitely on the acid side of pH 7. In consequence, in coagulating some waters of low alkalinity—and particularly colored waters of low alkalinity—by means of aluminum sulphate, we not only do not add artificial alkalinity to the water before or with the aluminum sulphate, but we may even add an acid to depress the pH to the desired point. If, as is sometimes the case, the water is made corrosive as a result of this treatment, then alkali may be added to bring up the alkalinity and pH to the desired extent; but this addition is made to the effluent from the filters, after sedimentation and filtration have removed the coagulated impurities from the scene.

What has just been said applies not only to the coagulation of turbid waters, but to colored waters as well. In fact it has even greater significance in the latter case; and, as we shall see, it is sometimes necessary to conduct coagulation for color removal at a considerably lower pH than would be required merely for coagulation of turbidity-producing suspended matter.

Permissible Color in Water

The maximum permissible color in water for paper making will evidently be governed by the type of paper manufactured. For most purposes, a maximum color of 10 on the platinum-cobalt scale has been considered satisfactory. In a smaller number of cases the limit has been set at 5; and once in a great while even zero is demanded.

The Nature of Color in Water

The literature on colored waters discloses an abundance of generalities and surprisingly little specific information. As a rule, it is stated simply that the color of the water is usually due to the vegetation or other forms of organic matter with which the water has come in contact in its watershed. It is assumed by inference, or stated as a fact, that the color is therefore due to the presence of tannates, gallates, humates, and other organic compounds which are reasonably associated with the organic matter with which surface waters usually come in contact.

Accordingly, it seemed worth while to investigate rather carefully the nature of the coloring matter and try to obtain some really definite information on the following questions of obviously fundamental importance: (1) What is the chemical constitution of the coloring matter? (2) Is it in the colloidal state or in true solution? (3) Is it readily oxidizable or not? (4) Is it typically only organic, or may it be inorganic as well?

It follows of course that if these questions could be answered with absolute definiteness, we would then be in much better position to consider the possibility of more effective methods of color removal than those now in vogue.

Experimental Work

One of the first efforts made in the course of our investigation was the attempt to produce in the laboratory a readily reproducible color, and so avoid the necessity of bringing into the laboratory large quantities of naturally colored water. It was found that both an infusion of tea and an oxidized alkaline pyrogallol solution gave colors approaching that of naturally colored water, but not quite comparable with it. In consequence, the colors so produced in the laboratory were used only for some qualitative and indicative experiments in which it was not practicable to use natural water.

It developed later in our work that the color in most, if not all, natural waters is due to more than one type of coloring matter; so that it is not to be expected that these natural colors can be synthesized simply or uniformly.

Electrochemical Nature of Coloring Matter

One experiment in which the tea and the oxidized alkaline pyrogallol were decidedly helpful, was an attempt to determine by electrophoresis the nature of the electric charge, if any, carried by the coloring matter. The coloring matter in these solutions showed a very definite migration towards the anode, thus affording convincing evidence that the particles of coloring matter are negatively charged. The tea and alkaline pyrogallol were used for this work rather than natural waters, as the relatively low color of the latter made it impossible to get definitely indicative results using the electrochemical equipment available at the time.

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Waste Committee.

[1] Member TAPPI, chemical director, International Filter Company, Chicago, Ill.
[2] Research chemical engineer, same company.
[3] Chemist, same company.

Colloidal Nature of Coloring Matter

The colloidal nature of the coloring matter in water—at least the most important part of it—was demonstrated by means of ultrafiltration of colored waters and tea thru parchment paper. It was found that a small part of the coloring matter was able to pass thru the parchment paper, but only at a very much slower rate than did the electrolyte (see Fig. 1). The major portion, at least, of coloring matter is therefore properly classified as colloidal as defined by Bancroft and Weiser.[4] It is entirely possible of course that a more suitable membrane would have effected even a sharper separation of colloids and electrolyte.

It is to be noted on the other hand, however, that there is no conclusive evidence to show that a small portion at least of the particles of coloring matter may not approach molecular dimensions and consequently be in true solution.

Organic Nature of Coloring Matter

That the coloring matter in surface waters is essentially organic in nature is shown by the fact that when the color is removed there is invariably a reduction in the oxygen consumption value of the water. (The oxygen consumption is determined by acid oxidation with potassium permanganate). Furthermore, when the color removal is effected by coagulation, the coagulated material, when ignited, always shows by its charring the presence of organic matter. The effect of color removal upon the oxygen consumption value of the water is shown in Table 1.

Probably the most striking feature in this tabulation is the evident lack of a consistent value for the quotient obtained by dividing the reduction in color by the reduction in oxygen consumed. We are not prepared to say, however, that these apparent inconsistencies are without significance.

The "Indicator" Nature of Coloring Matter

We have frequently observed, in connection with our studies of municipal and industrial water purification projects, that the color of a water may be very materially intensified when the alkalinity of the water is increased. This fact is of particular importance when color removal is accomplished by coagulation at a relatively low pH. It is easily possible to reach a deceptively favorable opinion as to the efficacy of such color removal, unless the water after treatment is made sufficiently alkaline to prevent corrosion, and any change in color resulting from the addition of the alkali then noted.

The influence of pH on the color of several of the waters investigated is shown in Fig. 2. The effect seems to be most pronounced in the alkaline range, but varies greatly with different waters. Thus the color of the waters from Hurley, Wisconsin, and from Ottawa, Canada, was more than doubled in passing from an acid to an alkaline condition; while the water from Long Beach, California showed a comparatively minor change. While there are probably a number of factors influencing this phenomenon which are not yet fully understood, the evidence does appear to indicate more than a merely coincidental relationship between the degree of change of color and the amount of natural alkalinity of the water. Thus waters of low alkalinity appear in general to show a greater percentage of change in their color than waters of high natural alkalinity.

[4] The Colloidal Salts, H. B. Weiser, McGraw-Hill Co., 1928, pages 274 et seq.

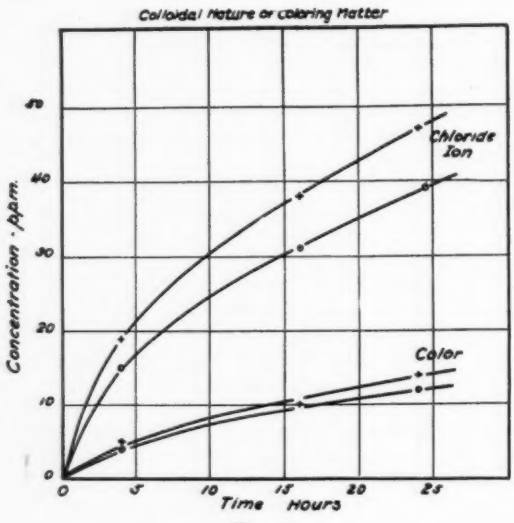

FIG. 1

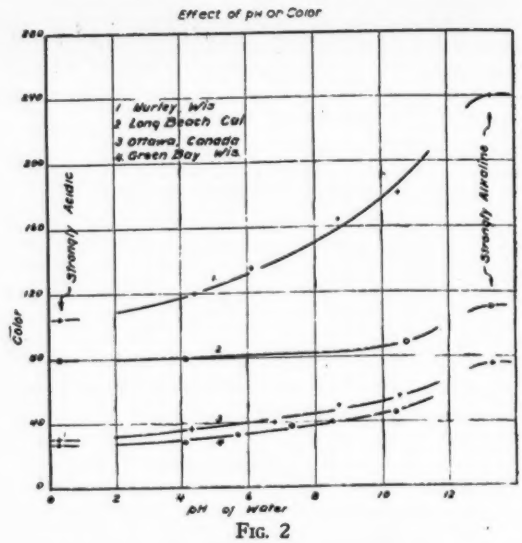

FIG. 2

The practical significance to the paper industry of this influence of pH on color is obvious. By the time the paper stock reaches the machine it has had the opportunity to adsorb from the process water a generous portion of its coloring matter and frequently with the color developed to an increased intensity because of the pH of either the stock or of the process water.

The Oxidizable Nature of Coloring Matter

The fact that the coloring matter of natural waters is essentially organic in character rather naturally suggests the possibility of destroying the coloring matter by oxidizing agents instead of attempting to remove it bodily by the usual methods of coagulation. The possibility is obviously of particular interest in the case of colored waters which are quite clear, in which case it might be possible to eliminate altogether the mixing, sedimentation, and sand filtration which are necessarily essential features involved in coagulation methods. Accordingly, a study has been made of the effect of chlorine—the cheapest oxidizing agent available—on the color of several of the waters investigated. The effect on the water from Long Beach, California is shown strikingly in Figs. 3 and 4. In this particular case, it was found that

TABLE 1
RELATION OF COLOR TO OXYGEN CONSUMPTION
(Color Removed by Coagulation)

Source of Water		pH	Color	Oxygen Consumed	Reduction in Color "A"	Reduction in Oxygen Cons. "B"	"A"/"B"
Green Bay, Wis.	Raw	7.3	45	21.5			
	Treated	7.2	22	14.2	23	7.3	3.15
Ottawa, Canada	Raw	6.8	50	11.8			
	Treated	6.8	7	5.0	43	6.8	6.3
Quebec, Canada	Raw	6.2	25	5.0			
	Treated	6.5	3	2.2	22	2.8	7.9
Winnipeg, Canada	Raw		12	9.2			
	Treated		5	6.3	7	2.9	2.4
New York, N. Y.	Raw		4	1.5			
	Treated		0	0.0	4	1.5	2.7
Edmonton, Canada	Raw		18	25.3			
	Treated		3	20.1	15	5.3	2.5
Long Beach, Calif.	Raw	7.7	80	10.5			
	Treated	7.7	15	4.7	65	5.8	11.2

TABLE 2
COMPARISON OF COAGULATION AND FILTRATION WITH CHLORINATION AND HYDRODARCO

Source of Water	Color: Raw Water	Color: Coagulated and Filtered	Color: Chlorinated and Filtered through Hydrodarco
Green Bay, Wis.	45	22	0
Quebec, Canada	25	3	0
Winnipeg, Canada	12	5	0
Edmonton, Canada	18	3	0
Long Beach, Calif.	80	15	0

TABLE 3
COLOR REMOVAL BY HYDRODARCO
(Filtration through granular Hydrodarco)

Source of Water	Color: Raw	Color: Treated
Green Bay, Wis.	45	0
Long Beach, Calif.	80	5
Ottawa, Canada	50	0

a dose of slightly over 11 parts per million of chlorine reduced the color from 80 to about 25, after a reaction period of 2 hours, and with a minimum residual of free chlorine.

It must not be assumed, however, that the same marked reduction can be secured in all cases. On the contrary, a very strongly colored water from northern Wisconsin showed very little destruction of coloring matter with chlorine, even when prohibitively large doses were applied. The explanation for the failure of the chlorine to remove the color in such cases may reside in the fact that chlorine may enter into many reactions other than those directly related to oxidation. Whatever the explanation, the fact remains that chlorine should not be relied upon for color removal promiscuously; its applicability must be determined in each case by experimentation beforehand.

Dechlorination with Activated Carbon

Destruction of organic matter with chlorine naturally raises the question of dechlorination to remove the undesirable excess of chlorine remaining from such treatment. As is well known, there are several methods by which dechlorination may be accomplished. In this particular field of color removal, however, the writers feel that activated carbon is the most desirable means of dechlorination. This is due not only to the complete and automatic manner in which activated carbon functions as a dechlorinator, but to the very important fact in this case that the carbon will frequently finish the work of color removal, the bulk of which work has already been performed by the chlorine.

In Table 2 is shown a comparison of the reduction in color effected by coagulation and filtration on the one hand, and by chlorination and filtration through Hydrodarco—the activated carbon used by the writers' organization—on the other.

The fact that the third column in the above tabulation contains nothing but zeros is impressive almost to the point of suspicion. The fact remains, however, that it is the exceptional case in which we have not been able to produce a water with zero color when hydrodarco is used as an adjunct to the treatment.

This fact naturally suggests two questions: How much of the color removal is accomplished by the Hydrodarco? If the amount is considerable, why not use the Hydrodarco alone, without the complication of other treatments? The ability of Hydrodarco to adsorb color directly is shown in Table 3.

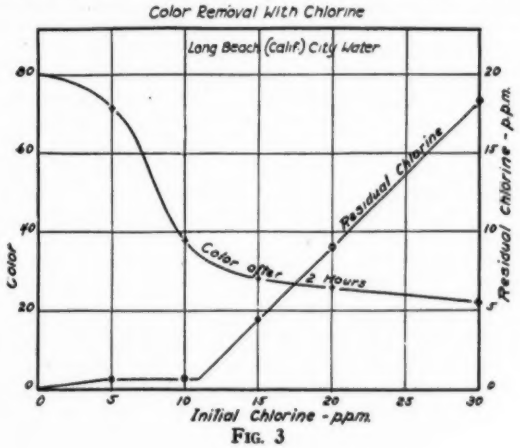

FIG. 3

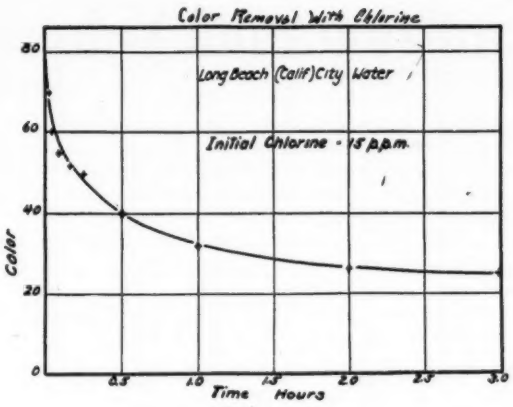

FIG. 4

The above tabulation gives the results of this treatment only in the case of the three waters indicated. This condition arises from necessity, not choice. By the time this stage in the investigation was reached, only the three waters in question were available for experimentation.

There are several reasons why, at least up to the present, Hydrodarco has not been advocated for the direct adsorption of all of the color present in water. In the first place, many colored waters are quite turbid. This means that coagulation and sand filtration would have to be provided ahead of the carbon, since only a comparatively clear water should be applied to the carbon; but the same coagulation and filtration will usually also materially reduce the color. This is notably the case, for example, at Ottawa, Ontario. This water at times has a very appreciable turbidity in addition to its rather high color. It has been found possible to remove not only the turbidity but also the color by means of carefully controlled coagulation. The purification plant which will be built by the city will therefore be essentially a filtration plant, with particular attention to the coagulation. The pH and alkalinity of the filtered effluent will be increased as required to prevent corrosion of the distribution system.

Then again, even in the case of colored waters which are quite clear, it has been thought that it is generally cheaper to remove the color with chlorine than to increase the frequency of revivification of the carbon, especially since chlorine and chlorine feeding equipment are frequently already available for sterilization, bleaching or other purposes. Nevertheless, in view of the remarkable decolorizing ability of Hydrodarco by direct adsorption, we are hoping to find a method of revivication so simple that it will be perfectly practicable in many cases to use Hydrodarco alone for the removal of color from colored clear waters—a method of revivification as simple, if possible, as the regeneration of a zeolite softener. Even now the use of this method of color removal for waters of relatively low color does not present any very formidable difficulty.

Probably the best way to summarize this paper is to say very briefly that developments in water purification have made it possible to approach practically any color removal problem with confidence; that no one method of color removal can be recommended blindly as the best for all cases; and that the fundamental principles of each method must be thoroughly understood to secure the most satisfactory results from that procedure.

In short, we may say of color removal what is true of so many chemical and engineering problems—that each case is an individual problem, which must be analyzed thoroughly and intelligently in all its aspects before the most effective and economical answer can be found.

Utilizing Fuel Value of Waste Sulphite Liquor*

By Herbert S. Kimball [1]

In the issue of "Power" of September 16, 1930 there appeared an article by W. Kuhles of Remscheid, Germany, pertaining to a process he has developed for utilizing the waste liquor from a sulphite pulp mill as a fuel. For an example he gives the results obtained from a sulphite mill of rather small capacity. My object in preparing this study is to estimate the performance of his process as applied to a sulphite mill of 50 tons capacity per day of pulp based upon American practice.

The waste liquor from a 50 ton sulphite mill amounts, at the rate of 1500 gallons per ton, to 75,000 gallons per day, or 3120 gallons per hour, which of a specific gravity of about 1.05 equals 27,000 pounds per hour. Mr. Kuhles evidently recovers 10 pounds of liquor per pound of pulp, whereas my factor amounts to 6½ pounds per pound of pulp, which appears about all that American mills can count on under present conditions of blow-tank practice and washing.

From various authorities the solid matter in the liquor as collected may run as high as 10 per cent under fairly usual conditions, although Mr. Kuhles uses about 12 per cent as the factor in his example.[2]

From the work of Bryant and others I have computed an "ultimate" analysis of the solid matter, assuming as does Kuhles, that there is present 7 per cent of moisture, as follows:—

Carbon	47.00 per cent
Hydrogen	4.50 per cent
Oxygen	27.50 per cent
Sulphur	6.25 per cent
Ash	7.75 per cent
Water [3]	7.00 per cent
	100.00 per cent

From this analysis I have computed the calorific value of the waste fuel to be 7810 B.t.u. per pound of fuel.

Several investigators have determined the calorific value of this fuel and the average appears to be not far from 8000 B.t.u. per pound of fuel, which is the value as stated by Kuhles. Considering that my computed analysis was made only as a check, I am using 8000 B.t.u. in my calculations.

Kuhles' Process

Kuhles' process consists in evaporating the weak liquor in a multiple effect evaporator, using exhaust steam, the strong liquor is then atomized in a tower which removes most of the remaining water by further evaporation, using the heat in the flue gases from the boilers which mingle with the atomized liquor. The solids fall as a dry powder, which is utilized as a fuel in the same way as is pulverized coal in modern practice. The gases and water vapor pass through a dust collector on their way to the stack.

Although Kuhles does not state that the weak, raw liquor is desulphurized prior to evaporation, I have suggested that such a process be used.

The results of the various steps are given, as follows:—

Desulphurizing Tower

In the desulphurizing tower the raw liquor from the blow-pits is subjected to heating by steam, and the "free" SO_2 is driven off, passed through a heat interchanger, where it is cooled and returned to the acid plant. The cooling medium is the liquor itself, which is pumped through the exchanger prior to entering the tower. The temperature of the raw liquor is increased by passing it through the exchanger at the expense of the heat in the gas driven off from the raw liquor. Both conditions meet the necessary demands, namely, steam is saved in the tower and the gas returned to the acid plant is reduced in temperature.

The sulphur returned to the acid plant may be computed as follows:—The waste liquor upon my own analysis contains .184 per cent "free" SO_2 which for 27,000 pounds of waste liquor per hour from a 50 ton mill means all of 10 pounds of sulphur per ton of pulp. From some rather inconclusive experiments made by me the amount of steam required to drive off the gas would be 423 pounds per hour. This process should be checked in a pilot plant. In Kuhles' article this process is not mentioned but I advise its adoption.

Multi-Effect Evaporation by Steam

From the data given in the foregoing we have the following quantities:—

Weight of waste liquor	27,000 pounds per hour
Solids, 10 per cent	2,700 pounds per hour
Water	24,300 pounds per hour
The evaporation reduces the water content to 50 per cent, therefore after evaporation we have:	
Solids, 50 per cent	2,700 pounds per hour
Water, 50 per cent	2,700 pounds per hour
Heavy liquor	5,400 pounds per hour
Original liquor	27,000 pounds per hour
Heavy liquor from evaporation	5,400 pounds per hour
Water evaporated	21,600 pounds per hour
Or	2,600 gallons per hour

If a quadruple effect evaporator is used 3.4 pounds of water may be evaporated per pound of steam, or 21,600/3.4 equals 6,350 pounds of steam per hour required for evaporation.

With care in collecting the liquor and steps taken not to over dilute it, the amount of solids would not be far from 10 per cent as previously noted. Kuhles, however, recovers nearly 12 per cent solids from the raw liquor and from his figures it is computed that the strong liquor from the evaporator contains 50 per cent solids.

With the liquor desulphurized it is expected that some of the difficulties in evaporating will be overcome.

Atomizing Tower

In the Kuhles process the strong liquor from the multiple effect evaporator is still further evaporated to a powder, containing 7 per cent moisture, in an atomizing tower. This powder is collected at the bottom of the tower and conveyed to the boilers where it is burned according to methods employed in pulverized coal installations. The heat supplied to the atomizing tower is that from the flue gases, escaping from the boilers, which are by-passed and rise near the bottom of the tower, meeting the strong liquor which is forced in, at the top, passing through a spray nozzle, and falling as a spray. The water vapor and gases are drawn off, together with possibly some dust from the fuel. They are passed through a dust collector, which recovers any such dust, and then into the main stack.

It should be noted that for some liquors such a method of evaporation is not the most efficient, and this point is verified by C. L. Wagner in his remarks quoted on page 237 of Technical Association Papers Series IX, 1926. It is expected that any fly ash in the flue gas would be caught in a dust catcher before the gases pass through the atomizing tower.

The amount of water to be evaporated in the atomizing tower is as follows:

Concentrated liquor from steam evaporator	5,400 pounds per hour
Solids remaining in atomizing tower, with 7 per cent moisture, 2,700 × .93 or	2,900 pounds per hour
Water to be evaporated in atomizing tower	2,500 pounds per hour

Considering the nature of the dry fuel collected on the bottom of the atomizing tower, the process of evaporation should be carried on at such a temperature that there will not be any danger of ignition. It would seem best to have only a small quantity of the dry fuel accumulate outside the boiler before using. In fact I

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Heat and Power Committee.
[1] Member TAPPI, consulting engineer, Waban, Mass.
[2] Due, probably, to European methods of cooking.
[3] Moisture reported separately for clearness.

believe this fuel would be classed as such that at a temperature of 150 deg. F., it cannot be safely stored for more than 12 hours, according to the regulations of the National Board of Fire Underwriters, effected Sept. 15, 1930.

For the temperature of the flue gases entering the atomizing tower I have selected that of 300 deg. F. The boiler setting will be of most modern design with either water walls or hollow walls and an air preheater and superheaters will be installed. (If superheaters are not necessary an economizer will do, depending on the conditions prevailing.)

The temperature of the incoming concentrated liquor will be about 150 deg. F. It is assumed that as soon as the spray meets the gases the temperature is reduced to 150 deg. F., and at this temperature the gases and the water vapor pass out to the dust collector.

Heat necessary:	B.t.u. per hour
To evaporate the water in the strong liquor, 2500 × 1007.4 latent heat at 150 deg. F.	2,518,500
To heat the water and solids to the temperature of evaporation	0
Heat necessary, other than that to supply radiation losses	2,518,500

Heat Available

To determine the heat available the weight of the flue gases must be known. From the analysis of the fuel given the following is obtained:

	Pounds of air per pound of fuel
Carbon: .47 × 11.52 (pounds of air necessary per pound of the element)	5.43
Hydrogen: (.045— .2750/8) 34.56	.37
Sulphur: .0625 × 4.32	.27
Theoretical air required	6.07
Excess air	1.20
Total air	7.27
To which add the weight of the fuel less water and ash	.85
Water in fuel, 7 per cent	.07
Total weight of flue gases per pound of fuel (neglecting water in the air supplied)	8.19

With the temperature of the flue gases at 300 deg. F.
The weight of fuel per hour—2,900 lbs.
Weight of flue gases per pound of fuel—8.19 lbs.
Specific heat of the gases—.25
Then the amount of heat in the flue gases is:
2,900 × 8.19 × 300 × .25 = 1,780,000 B.t.u. per hour, which are furnished to the atomizing tower. However, as the temperature of the gases is reduced in the tower to 150 deg. F. and then carried to the dust chamber and stack, only one-half of the heat is available, or 890,000 B.t.u. per hour.

The available heat is not sufficient to perform the evaporation and to supply the deficiency flue gases from other boilers must be used, or enough coal mixed with the waste fuel to make up the difference. The draft will be reduced on account of the resistance due to the gases passing through the equipment; and to compensate for this loss fans will have to be installed. The cost of power to operate the fans will be a charge against the production cost of the steam generated by the waste fuel.

Boiler Performance

Referring first to the evaporation I am judging from the design of the setting, with the auxiliaries, as explained, that with a 14,000 B.t.u. coal, there would be evaporated 12 pounds of water per pound of coal; but as the waste fuel has a fuel value of 8000 B.t.u. per pound, that is, 57 per cent of the heating value of the coal, the amount of water evaporated by the waste fuel would be 12 x .57 or 6.84 pounds of water per pound of waste fuel.

As Kuhles states that he can evaporate 6½ pounds of water with his waste fuel, I believe that he operates the combustion of his furnace to give a considerable higher temperature to the flue gases than I have assumed in my studies. With this in mind and also remembering the far greater amount of fuel he obtained per ton of pulp than I assumed (almost 1.9 as much) I have calculated that he probably has enough heat to perform the operation in the atomizing tower. With his greater recovery of waste fuel per pound of pulp Kuhles may, of course, generate more steam per pound of pulp than my lay out will accomplish.

If in the 50 ton mill under consideration there is recovered 2900 pounds of waste fuel per hour and the evaporation is 6.84 pounds of steam per pound of fuel, then the steam generated is:

2,900 × 6.84		19,836 pounds per hour
Deducting steam used in process:		
Desulphurizing tower	423 pounds	
Multiple-effect evaporator	6,350 pounds	6,773 pounds per hour
Steam available for power or cooking		13,063 pounds per hour

In a 50-ton pulp mill the pulp produced per hour is 2.083 tons, and if the steam generated from the waste fuel is used for cooking, the amount available would be 13,063/2.083 or about 6500 pounds per ton of pulp. This shows that with the addition of some waste flue gas the net amount of steam generated would supply the steam for digesting the pulp.

Cost of Operation

The investment is approximately $50,000

The overhead charges, as follows:	
Interest	6.00 per cent
Depreciation, based upon an 8-year life	12.50 per cent
Up-keep	6.50 per cent
Total	25.00 per cent
Accordingly:	Per day
Overhead, 25 per cent of $50,000 = $12,500 per year, or	$41.67
Labor, 3 men per day at $5.00	15.00
Miscellaneous, such as power, etc.	6.33
Cost of steam per day	$63.00
Cost of steam per hour	$ 2.65

The net steam production is 13,063 pounds per hour, which is just about 20 cents per 1,000 pounds.

If 14,000 B.t.u. coal was used with an evaporation of 12 pounds of water per pound of coal, the amount of required coal would be 1,088 pounds per hour to evaporate the necessary 13,063 pounds of water. This is 26,000 pounds of coal per day or 13 tons per day. If the coal was purchased at a cost of $63.00 per day the price per ton would be $4.85

Some mills pay as much as $1.50 more per ton, which would amount to $5,850 per year, the saving on utilizing the waste sulphite liquor for a fuel. This saving amounts to 11.7 per cent on the investment.

Dust Collector

The flue gases and water vapor, at a temperature of 150 deg. F., together with any dust from the tower pass into the dust collector. The dust is caught, collected and conveyed to the fuel bin, while the gases and water vapor pass to the stack.

VOLUME OF THE GASES AND WATER VAPOR

Gas	Pounds of air supplied per pound of fuel	Oxygen, lbs.	Gas, lbs.	Vol. 1 lb. at 60 deg. F., 14.7 pounds abs. cu. ft.	Cubic feet of gases and vapor at 60 deg. F.	Cubic feet of gases and vapor at 150 deg. F.
CO_2	Carbon, 5.43	1.25	CO_2—1.73	8.60	14.80	.....
H_2O	Hydrogen, .37	.085	H_2O— .10	...	....	.....
SO_2	Sulphur, .27	.062	SO_2— .13	5.91	.77	.....
N	Nitrogen, 6.07 × .77 =		N —4.65	13.52	63.00	.....
	Flue gas from theoretical air		6.61	...	....	.....
	Excess air		1.20	13.14	15.80	
					94.37	110.50
	Water (moisture) in fuel		.07			
	Water, formed by the union of the H and O in fuel (the balance of the H unites with the O of the air, given above as .10 H_2O		.31			
	Flue gas per pound of fuel		8.19			
	Water vapor from water in fuel with flue gas from atomizing tower from items as given: .10 plus .07 plus .31 equals .48 pounds per pounw of fuel. One pound at 150 deg. F. has a volume of 24.2 cu. ft. Then 24.2 × .48 equals volume to be added to the volume of the gases, or					11.6
	Cubic feet of gas and vapor from water in fuel entering dust collector per pound of waste fuel					122.1
	2,900 pounds of waste fuel per hour, or 48.33 pounds per minute, or cu. ft. of vapor and gas per minute					5900.
	Add water evaporated from strong liquor, 2,500 pounds per hour, or 41.66 pounds per minute, or 41.66 × 24.2 or water vapor per minute (cu. ft.)					1010.
	Cubic feet per minute					6910.

To which must be added the extra flue gas taken from other sources to make up the deficiency in the tower, so that the total volume of the gases and vapor entering the dust chamber might be 20,000 cu. ft. per minute.

If the velocity of the gases, etc., was 1000 feet. per min., the area of the connecting flue would be 20 sq. ft.

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Bird Centrifiners, built by specialists in paper making machinery, offer you the one best method of stopping dirt. They make clean, Centrifined paper that sells faster — that shows better profits.

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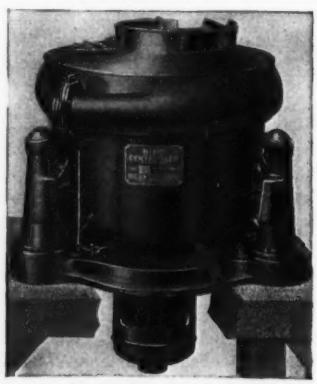

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Conclusion

If the waste fuel is to be recovered, it is apparent that our mills must modify to some extent the method of washing the pulp in order to save more of the waste liquor and to do so with the minimum amount of water.

The ignition point of the recovered fuel should be investigated to be sure that there is no danger from spontaneous ignition, either in the atomizing tower or storage bin.

I have hopes that the multiple effect evaporator problems have been solved because of the work in recent years along this line.

C. L. Wagner states that there is no danger of the products of combustion, i.e., SO_2, attacking the boiler tubes, owing to the high temperature which prevents the formation of any moisture. This is true, as I have observed, from my work of handling SO_2 gas at high temperature.

Regarding the atomizing tower, while it should be carefully designed, it need not be a matter of great expense. The transfer of heat may be slow and care should be taken to have the proper amount of flue gases come in contact with the spray. Careful consideration should be made regarding the carrying away of the rather large amount of water vapor by the flue gases at the temperature found desirable.

While my experience with dust chambers or collectors has been considerable, the per cent of water vapor in the dust laden gases has not been so large as it will be in our case. Here, again, the temperature will be a factor.

Practice and Control of Beating and Jordaning*

By F. W. Motschman[1]

By beating is meant that process of pulp preparation for the production of a suitable sheet of paper. Thus the beating or stuff preparation procedure will vary with the physical requirements to which the finished sheet will be subjected or those particular properties which it is supposed to possess. In the case of such sheets as dry finished manilas, news, hanging, the only treatment needed will be an intimate mixing of the fibers with the size, color, alum, clay, followed by light jordan action as an aid to formation. When pulp is used in lap form the beater serves the functions of a disintegrator.

On such sheets as Number 1 kraft or parchment the importance of proper beater treatment cannot be overemphasized. Proper treatment to my mind requires attention to the following details—order of furnish; here the only point upon which I insist is that the alum be kept out of the beater until it is needed to set the color or the batch is within say fifteen minutes of being dumped to the chest. Some color men are now claiming that if the color is not added until after both the size and alum have reacted satisfactory results will be obtained and that savings in color will be effected. Personally, I have not had any experience on this point but if there are any color men present perhaps they would enlighten us.

Roll Manipulation

The roll manipulation during beating should be decided according to local conditions. If your stock is soft, the roll setting must be kept light in order to avoid the condition of short stock. Some stock requires that it be treated roughly but I do not believe that any fiber should be subjected to a full roll setting at the very start. It is, of course, only reasonable that disintegration must precede hydration, so if the beater has been furnished with much lap stock or broke this material should be given time to soak up and partially disintegrate. When considered from the mechanical side the logic of this procedure becomes quite evident as you will have probably marvelled, just as I have, at how much abuse a beater will stand. Jumping of the roll on undisintegrated material in the beater must be cutting stock in addition to the damage it does to the lighter bar and journals and to the bed plate and roll bars.

To properly introduce the stock to the roll treatment, I believe that the roll should be brought to its final setting through at least a light, a medium, and then the full setting. Each of these preliminary steps should be of about fifteen to twenty minutes duration and longer if the cycle permits. If your beaters are equipped with any type of motion recorders, it is easy for the operator to follow this procedure and, incidentally, for you to check him. I also recommend the use of safety set screws at the adjustment points on the connecting rod so that not just anyone can adjust the position which is predetermined as being either light, medium, or full. I also have always told the beater men to always set their roll by ear and stick, thus doing away with the possible alibi of blaming faulty roll action on the clock. Our men are given to understand that the function of the clock is a guide to roll manipulation and at a quick glance shows for how long a given beater has been "on."

There is quite a pronounced analogy which may be shown between the various treatments which cellulose or pulp undergoes. In the digester house, haste during the introductory stage makes waste, in the form of increased knotter rejects; haste in the first stage of bleaching makes waste in the form of loss in yield due to the formation of oxycellulose. If you slow down either of these processes you can treat more drastically at the end and still obtain more and better pulp. On the paper machine, too much (hasty) pressure as the sheet leaves the wire may lead to crushing and waste, in the form of wet broke; yet introduce your weight treatments gradually and increasingly and the sheet will be better finish, harder and more dense. So, also, is this procedure very true in the beater room if you want to make ideal, long, slow stock.

Measuring Beating Progress

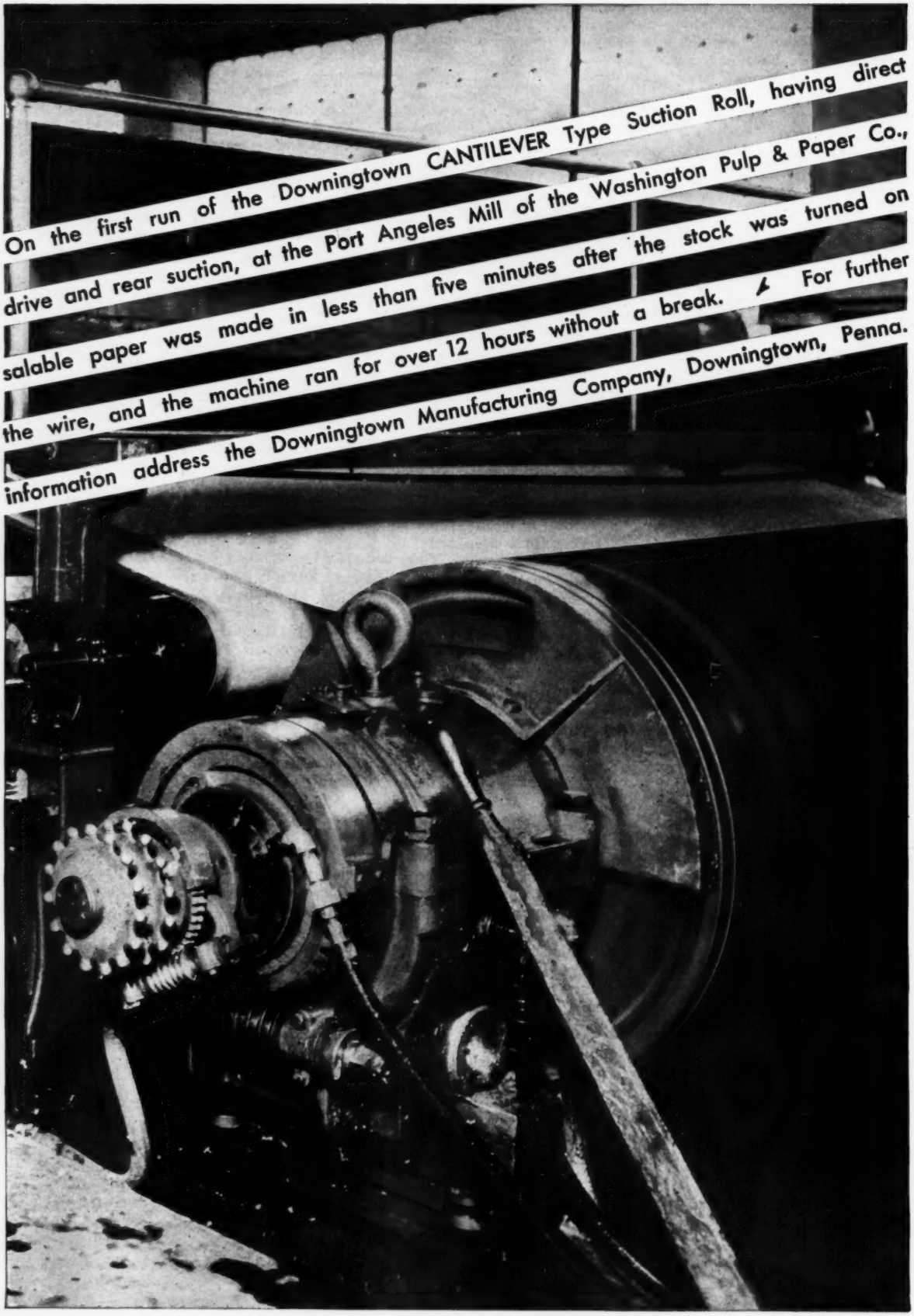
There are a number of ways of measuring the progression of the process of beating. The most common are either slowness or freeness. By slowness is meant the time required for a volume of water to drain from a suspension of fiber in the water. By freeness is understood the measure of the volume of water which will drain from the same sort of a suspension. The volume measured may be either the instantaneous or the ultimate quantity. If you plot the two curves on the same pulp you will note a reciprocal relationship. It must be remembered that either reading is seriously affected by changes in consistency. At our mill we use an arbitrary figure of the slowness in seconds per gram of stock, thus correcting for the changes in consistency.

If the production is such that the beater cycle will allow of it, samples may be taken from the beater for handsheet making and the Mullen and Elmendorf tests made upon these. These readings, however, I have found to be unreliable until the stock is about 60 per cent developed. This is true only in the mill, as this is the standard method for laboratory evaluation of pulps.

There are also some mechanical devices which measure, indicate, and, in some instances, record, the consistency and degree of development through a measure of the resistance presented by the stock to a drag or propeller. I have never used this method but consider that it would become too expensive for the larger mills to equip, say, thirty-five or forty beaters with recording watt meters however small.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Stuff Preparation Committee.

[1] Member TAPPI, International Paper Company.


On the first run of the Downingtown CANTILEVER Type Suction Roll, having direct
drive and rear suction, at the Port Angeles Mill of the Washington Pulp & Paper Co.,
salable paper was made in less than five minutes after the stock was turned on
the wire, and the machine ran for over 12 hours without a break. For further
information address the Downingtown Manufacturing Company, Downingtown, Penna.

In running beater tests in an attempt to compare different makes of beaters on a basis of horsepower hours per ton, I have made temperature readings along with slowness, Mullen, tear, and power, readings upon plotting the data obtained I found the smoothest curves to be the slowness and temperature. I am really quite sold on the idea that one might install a recording thermometer in the side wall of a beater and just as we do in the digester house govern our process by predetermined temperature curves—that is, for a given make of beater provided the other factors were kept reasonably uniform. The temperature rise is the result of friction and is a measure of the work being done upon the stock. I would say that the heaviest consistency possible, commensurate with good circulation, would give the greatest temperature rise and would produce fiber in the best condition for further treatment.

Jordans

For ordinary purposes of discussion we may regard the jordan as a single pass beater and so the same general rules, regarding fiber destruction or preservation, would hold for either; particularly true is the relation between low consistency and short stuff. I have read that in Europe somewhere they were experimenting with the aerated stock by means of which they were able to go to consistencies of 7 per cent. I like very much to see stuff being put through a jordan at at least 3 per cent, but 7 per cent seems almost too much to hope for. If such stock can be handled, the jordan becomes quite a hydrator and should appeal to the American manufacturer because of the capacity per unit machine or per unit of floor space.

On Number 1 kraft we figure to have a beater development of 66 per cent, the remaining 33 per cent being done in the jordans, but on such hook-ups as I have seen in some mills where they have seven jordans to a machine, this development is reversed.

Ordinarily a number of jordans are made to operate in series, that is, the discharge of the first is piped to the intake of the second, etc. They may, however, be so piped as to allow incoming stock to be fed from a header to some of the units direct and their discharges to enter a second header leading to the chest or machine fan pump as the case may be. This hook-up is called a parallel one. Personally I prefer a combination of the two—the series arrangement being used for the larger fraction of the flow but having one or more units which may be set up harder than the rest to produce a filler stock as an aid to better formation of the sheet.

There are many controversies regarding the advantages and disadvantages arising from the use of the various types of jordan fillings and of the various types made up in ordinary cast steel, manganese steel, bronze, Monel Metal, etc.; you are probably as familiar with these as I am and doubtless have already decided which type or combination suits your average sheet best.

The wider bars and cluster fillings are an attempt at increasing the hydrating possibilities for a given unit with the least amount of cutting. The use of stainless alloys is an attempt to combat the eroding or "water-washing" of the bars. Our experience has been that the bronze filling gives a much better life and due to the maintaining of the full bar surface at all times, the plug does not have to be set up so hard and so we have a direct power saving at the same production rate.

If you want an absorbent sheet you will probably use a stainless steel plug and shell with bars of ¼ inch and will run plenty of water with the stock through the machine jordan. Whereas if you are trying to make an excellent sheet of 10 pound citrus paper you will use a bronze or monel plug and shell with 5/16 inch bars or wider if you can afford it. You will also run the stock through the jordans as heavy as possible for the production of long slow stuff.

We mentioned earlier of the various methods of following the slowness development but if the finished product is to be uniform we must not only control and standardize the process but we must begin with a uniform supply of raw material.

Jordan Control

Through the process measurements must be taken and much judgment applied to these readings. For instance, it does not suffice to know that the amperes showing at the machine jordan motor may be the same as the previous run or hour, but is the consistency the same? Heavy stock means more power or less development at the same power. Another good index to follow is the stock temperature. If the stock is coming hot at one stage it indicates that too much work is being done upon it at that stage and, by the same token, not enough work is being done in the earlier stages. If you will distribute your power load more evenly beginning at the lowest, I think you will find you can slack off the hot unit before long and still hold your test up.

A generous use of instruments will soon pay for themselves as part of the control system. No matter how well you get along with your relief mate or how full a story you give him as to how you have been handling the stock, the change of tours is apt to be followed by a period of grief and broke. Motion recorders will show beater roll and jordan plug manipulations. Liquid level gauges recording the amounts of stock in the beater and machine chests will show also how fast the stock was being run over into the machine chest, will show on whose tour that bunch of stock was run over onto the basement floor and will kill the story about having to shut down for stock. A temperature clock on the tray water will show up the excessive use of fresh water into the system and also any excessive steam usage at the machine white water tank or wire pit. A recording vacuum couch gage will prove the uniformity of operation and may be used by the machine tender to indicate change in porosity on a fussy order or to show the change in caliper on a tag sheet provided he knows his stock has remained the same.

Alkaline Pulping Methods Committee Report

During the past year, this committee has concentrated its efforts to identify more fully and clearly the terms set forth in the tentative standard method for sulphate recovery room practice, formulated during the annual meeting of the association in 1930.

This method as finally drawn up, has been submitted to all producers of sulphate pulp, for their corrections, suggestions or acceptance.

The committee is now in a position to present this method to the association for adoption.

The bomb scale "critical temperature" studies on long leaf pine, as carried out by the Forest Products Laboratory staff, have been continued and enlarged upon during the past year. An informal report will be given at the sectional meeting of this committee.

The bleaching of southern pine, another study of the Forest Products laboratory staff, although not sponsored by this committee, was of great interest and value to the manufacturers of alkaline pulp.

For the coming year, the committee suggests the continuance of the "critical temperature" studies of long leaf pine on a semi-commercial basis, the pulps to be run into paper on the small machine of the Forest Products Laboratory and the resulting sheet evaluated in the usual manner.

Another study which the committee suggests is the proper treatment of each of the various broad leaf woods, used in the soda process, such as popular, gum, beech, birch, aspen and extrated chestnut chips, with particular reference to temperature, pressure, length of cook, condition of wood, concentration of chemical, and re-use of black liquor in digestor, with special note of yield, bleach ability and bulking qualities of the resulting pulp.

To all who have cooperated with this committee during the past year, we express our appreciation.

E. S. HINMAN, Chairman

Mechanical Handling of Pulpwood with Power Rakes*

By James W. Boyd [1]

The high cost and considerable danger attendant to the manual handling of pulpwood on and off of storage piles, have long been troublesome factors in the paper industry. For some unknown reason, this field for mechanical handling seems to have been almost entirely neglected in the past.

Early in 1927, Joseph Warren, mill manager of the S. D. Warren Company at Cumberland Mills, Maine, discussed with James B. Phillips, president and general manager of the Maine Electric Company at Portland, Maine, the possibility of handling pulpwood in the same manner as coal or similar bulk materials. The idea of pulling the wood on and off the piles with a drag scraper outfit was decided upon as most feasible. Mr. Warren offered his wood yard as an experimental ground and operations were started. It was not until December, 1928, that successful equipment was developed. Tests were made over a period of a year to determine capacity, maintenance costs, power consumption, etc.

In the spring of 1930, a complete pulpwood rake apparatus was purchased for the wood yard of the new plant of the Maine Seaboard Paper Company at Bucksport, Maine. This is essentially the same as that which has been successfully operating at the S. D. Warren Company for over two years. Storing was begun in August and by November a pile of over 55,000 cords had been built with the rake. The paper machines were started on that date and reclaiming has been carried on since at the rate of over 350 cords per day using but one operator.

The pulpwood rake is a tried and proven device having been in successful operation for over two years performing both functions of storing and reclaiming.

The following facts are pertinent and have been established by thorough tests:

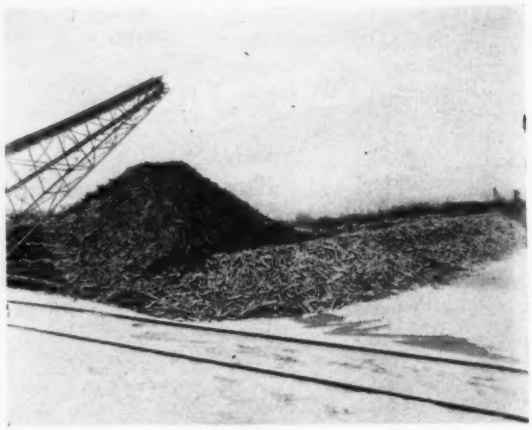
1. It may be used for either storing or reclaiming or both.
2. It requires but one operator.
3. All manual labor is eliminated.
4. The actual savings in wood handling costs justify the required investment.
5. It breaks up frozen piles without difficulty and requires no help from explosives.
6. It does not damage the wood.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Equipment Committee.

[1] Maine Electric Company, TAPPI contributing member.

HEAD TOWER AND RAKE RECLAIMING INTO CONVEYOR.

TAPPI SECTION, PAGE 90



RAKING WOOD FROM UNDER STACKER TO STORAGE PILE

7. The maximum capacity is sufficient for the largest newsprint mill and can be reduced as required.
8. The current consumption and maintenance costs are nominal.

Technical Data

The rake is constructed entirely of steel and consists of a structural frame covered with steel plate electrically welded throughout. No bolts or rivets are used. Each tooth is separately pivoted. The same operation is obtained with either plane surface in contact with the wood.

It is manufactured in two sizes with specifications as follows:

LARGE SIZE	
Weight	8400 pounds
Length	33 feet
Width	10 feet
Penetration of teeth	4 feet, 4 inches
Average capacity for storing	1½ cords per trip
Average capacity for reclaiming	2 cords per trip
Average required rope pull	15,000 pounds

SMALL SIZE	
Weight	5,400 pounds
Length	23 feet, 6 inches
Width	7 feet
Penetration of teeth	2 feet, 9 inches
Average capacity for storing	¾ cord per trip
Average capacity for reclaiming	1 cord per trip
Average required rope pull	8,000 pounds

The haulage engine is a double drum band friction hoist mounted on a cast iron base and has been especially developed for this service. The ffictions are single bands. Each clutch is operated independently through remote control being set by a heavy coil spring and released by a General Electric hydraulic operator. The operator's station is equipped with two small electrical controls, one for each hydraulic operator, and a stop and start button for the hoist motor.

It is manufactured in several sizes to meet different rope pulls and speeds with general specifications as follows:

Drums: cast iron with finished rope grooves and carried on forged steel shafts.

Gears: Cast steel pressed and keyed to shafts and cut for high speed.

STORING ON LONG NARROW PILE.

Motor pinion and shaft: Forged in one piece of high carbon steel and cut for high speed.

Bearings: All Hyatt roller bearings.

Base: Cast iron with all seats for bearings and motor planed.

Clutches: Single band type lined with Thermoid. Set by heavy coil springs. Released by General Electric hydraulic operators.

Motors: General Electric motors or equal. Type KT-synchronous speed—normal torque—normal starting current—squirrel cage rotor—continuous duty—h.p. depending upon rope pull and speed required.

Note: All hoists furnished for pulpwood rake service are designed for a safe overload of 50 per cent under continuous service.

The head or pulling tower may be either travelling or stationary or high or low depending upon conditions. Heights up to 100 feet are practical. It contains the haulage engine, operator's cab and two head sheaves to lead out the rake ropes. It is usually of the travelling type with a heavy concrete counterweighted base and from 40 to 70 feet in height.

The same conditions apply to the tail or rear tower as to the head or pulling tower except that it is of much lighter construction and does not contain machinery or controls. It simply supports tail sheaves which return the haul back rope to the head tower. In many cases no tower is required as the tail sheaves are anchored to deadmen in the ground or are bridled up on to the wood pile from such deadmen.

All sheaves are at least 30 times rope diameter made of cast steel with Hyatt roller bearings and mounted in steel casings provided with swivels.

The specifications for the ropes are as follows: The size depends upon rope pull required. Each rope consists of 6 strands, 19 wires each around one hemp center seale patent. The grade used is known as plow steel.

Data on S. D. Warren Co. Installation

STORAGE PILES:

Number: 3

Size: 425' x 200' x 50' — 60' high.

Capacity: Approximately 16,000 cords each.

Wood: 4' peeled poplar—wet and dry.

EQUIPMENT IN USE:

Stacker: 70' high—cantilever, traveling type—double chain—capacity 80 cords per hour.

Rake: Large size as described.

Ropes: 1" dia. 6x19 plow steel Seale patent.

Rope speed: 400 feet per minute.

Rope pull: 13,000 pounds.

Capacity: Average for storing—90 cords per hour. Average for reclaiming—120 cords per hour.

Head tower: Traveling—50 feet high—self propelled.

Haulage engine: As described, powered with 225 h.p. motor. Intermittent rating.

Tail sheaves: Two anchored to deadmen in ground at rear of piles.

Conveyors: V trough armoured with steel plate—single chain carrying flat plates—capacity 80 cords per hour.

Data on Maine Seaboard Paper Installation

STORAGE PILE:

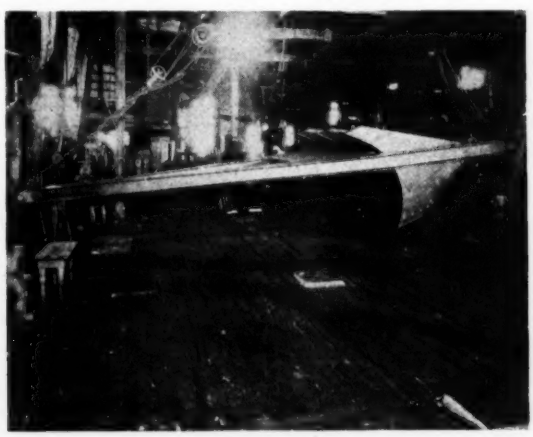
Number: 1

Size: 400' x 500' x 60' high.

Capacity: Approximately 65,000 cords.

Wood: 4' Spruce mixed, peeled and rough—mostly wet.

RAKE CARRYING FULL LOAD.



THE PULPWOOD RAKE

THE BROWN PAPER MILL CO., INC.

MONROE, LOUISIANA.

THE LARGEST SULPHATE PULP
AND PAPER MILL IN
THE WORLD.

MAKERS OF

ALL SULPHATE
WRAPPING
BAG
LINER

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500 TONS DAILY

Sales Office: MONROE, Louisiana

EQUIPMENT IN USE:

Stacker: 50' high—cantilever, traveling type—double chain—capacity 75 cords per hour.

Rake: Large size as described.

Ropes: 1" dia. 6x19 plow steel Seale patent.

Rope speed: 400 feet per minute.

Rope pull: 15,000 lbs.

Capacity: Average for storing—90 cords per hour. Average for reclaiming—120 cords per hour.

Head tower: traveling—self propelled—65 feet high.

Tail or rear towers: Two—traveling—each provided with tail sheave elevated 30 ft.—running on stacker tracks.

Haulage engine: As described powered with 200 h.p. motor continuous rating.

Conveyors: V trough armoured with steel plate—single cable with buttons—capacity 75 cords per hour.

Comparison of Present Installation

As noted above, these two installations are very similar with a few exceptions.

Warren uses chain conveyors whereas Maine Seaboard uses cable. Irrespective of first cost, maintenance and life, the cable conveyor, to reclaim into with the rake, is far superior to the chain conveyor, for the reason that it requires no conveyor tenders. The buttons on the cable conveyor keep the wood moving and very well distributed. The chain conveyors carrying flat plates are not as efficient and do require one or more tenders.

Warren's stacker is 70 feet high whereas the maine Seaboard stacker is 50 feet high. Both wish to build piles from 55 to 60 feet high. It has now been determined that the stacker should be of the same height as the desired pile.

Tail sheave towers are required by the Maine Seaboard Paper Company to build up the rear of the pile to full height. S. D. Warren does not need tail sheave towers as there is, fortunately, a railroad embankment just in rear of the piles some 25 feet high into which the deadmen are set, thus providing a natural elevated anchorage. It has been determined that when using the rake for storing, tail sheaves should be elevated to at least one half the height of the finished storage pile.

General

Since the pulpwood rake, is in fact, a drag scraper all of the inherent flexibility of that equipment is retained. This makes possible a comparatively simple application for the solution of most wood handling problems.

Pulpwood is the largest material in bulk and money value that is handled by the mill. A justifiable investment for modern handling equipment should therefore be speedily reflected in a substantial reduction in the finished cost of paper.

Abstracts and Bibliography Committee Report

Clarence J. West, Chairman

During the year 1930, the following contributions from the Committee on Abstracts and Bibliography have appeared in the columns of the Technical Association Section of the PAPER TRADE JOURNAL:

ABSTRACTS: During the past year, there appeared 153.5 pages of abstracts, as compared with 71 pages in 1929, 66 pages in 1928, 65 pages in 1927, 107 pages in 1926, 77 pages in 1925 and 78 pages in 1924.

The large increase this year is due to an effort on the part of the secretary of the association and the chairman of the committee to catch up with the tremendous volume of abstracts which had accumulated, due in part to the amount of material which must appear in the technical section and in part to the honest effort on the part of the committee to cover the literature and patents of interest to the association. It has been found necessary to shorten the abstracts somewhat but it is believed that this does not materially decrease their value. The Committee appreciates the work of Secretary Macdonald and of Henry J. Berger, editor of PAPER TRADE JOURNAL, in this attempt to bring these abstracts up to date.

Committee Members

The Chairman wishes to again express his appreciation of the very faithful services of the other members of the Committee, A. Papineau-Coutre, C. E. Peterson and J. F. Ohlson, who are responsible for the abstracting of the magazines and patents.

BIBLIOGRAPHIES: The annual bibliography for 1929 appeared in the Convention Number of the Paper Trade Journal (Feb. 20, 1930, pages 197-259 [odd pages only]) and in the Technical Association Papers XIII: 147-181 (May, 1930). The reprint in the Technical Association Papers again carried an author index. The bibliography for 1930 is submitted as a part of this report.

The annual supplement, covering the activities of the Paper Section of the Bureau of Standards for 1929, appeared in Paper Trade Journal for May 22, 1930 (90, no. 21:51-52); this was prepared with the cooperation of the Chief of the Paper Section, Mr. B. W. Scribner.

During the year there has been prepared a supplement to the bibliography on "Waste Liquors and Gases of the Paper Industry," which appeared in Paper Trade Journal 81, nos. 14-26 (Oct.-Dec., 1924); the original list contained 534 patents; the supplement contains 341 additional patents and will appear in the Technical Association Section early in 1931.

INDEXES: The semi-annual indexes for Volumes 89 and 90 of the Technical Section were published during 1930. The index for Volume 91 has been prepared and will appear early in 1931. The chairman, who compiles these indexes, is always open for suggestions as to improvements in these indexes; they should be as complete as possible, because they furnish a rather detailed index of the papermaking literature of the world.

PATENTS: A classified list of the United States patents on papermaking for 1929, arranged according to the Patent Office classification, appeared in Technical Association Papers XIII: 292-299 (May, 1930). During 1930 there have also appeared quarterly chronological lists in the Paper Trade Journal for Feb. 6, May 8, July 27, and Oct. 23. The complete list for 1930 will appear in Volume XIV of Technical Association Papers.

Patents and Photostats

REQUESTS: Evidence of the value of the work of the Committee on Abstracts and Bibliography is seen in the number of requests received for copies of articles and patents abstracted.

Members of the association desiring copies of patents will save time, however, if they bear in mind that copies of any United States patent may be secured directly from the U. S. Patent Office, Washington, D. C., the price being ten cents each (currency not stamps should be sent). Photostat copies of patents of almost all other countries may also be obtained from the Patent Office, though in this case it is necessary that the cost of the photostat be ascertained before ordering, as all orders must be covered by remittance. However, if desired, a sufficient sum may be sent with the request and the excess over the actual cost will be refunded with the photostat. In most cases, one dollar will cover the cost of any photostat.

The Committee will be glad to receive suggestions for possible compilations or for methods of improving and making more useful any of its present activities.

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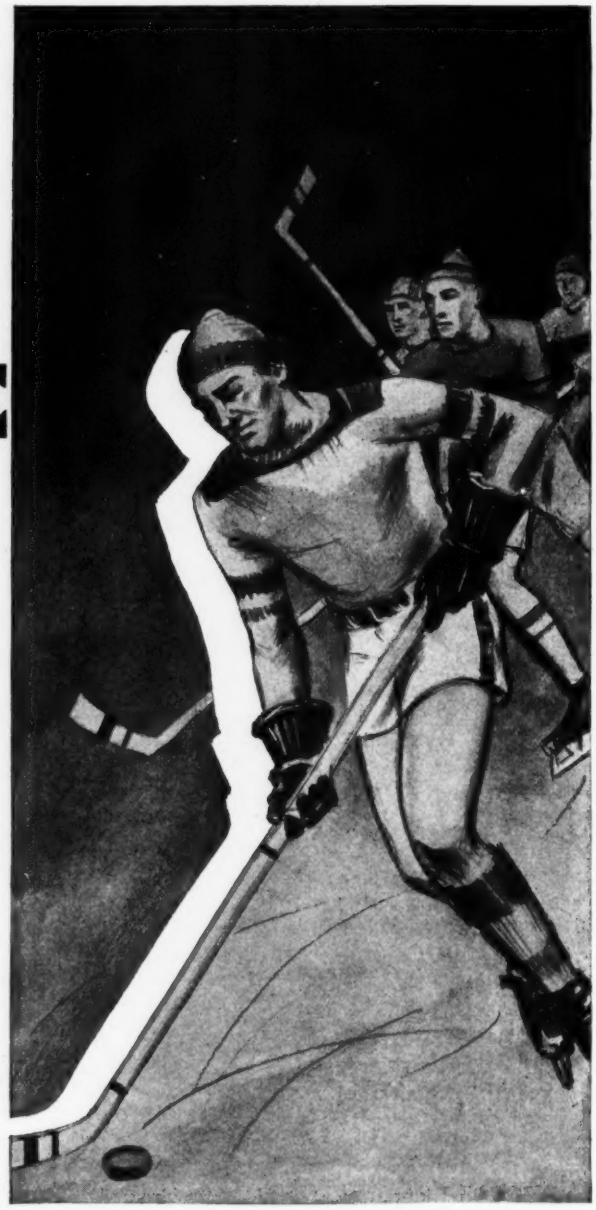

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Liquid Chlorine

Hard Facing In The Pulp And Paper Industry *

By W. A. Wissler [1]

Abrasive wear is the source of considerable trouble and expense in many industries, including the manufacture of pulp and paper, and its reduction to a minimum will result in decided decreases in maintenance cost and often in increased production per month. The most direct cost of wear is due to the purchase of new parts or the forging and conditioning of such worn parts as can be returned to service, but the act of replacement creates charges that are often a considerable item. In addition to the labor required, the machine must be shut down, with a consequent loss of production that must be considered if the time of replacement is long. Parts that wear out rapidly are usually dull or worn for a considerable length of time before they are replaced, which means that the machine is working less efficiently and probably producing less rapidly than if the working parts were in better condition. The machine will also use more power, which in many instances must be considered as an item of cost, and this in turn usually causes increased maintenance or faster depreciation than would be necessary if the machine were in first-class condition.

Prior to the introduction of hard facing, attempts to combat abrasive wear consisted in making wearing parts of alloys more suitable for the purpose than those previously used. The choice of alloys was limited by the cost because the pieces were made solid and usually required a considerable volume of metal. The alloys had to have a certain minimum degree of strength and toughness, because they were required to stand the strain of transmitting the power to the wearing or cutting surfaces; hence they could not be selected solely on the basis of resistance to wear.

Hard facing is a more logical way to attack and solve the problem. The machine part may be made of steel, cast iron, or a limited range of other metals selected solely for strength, toughness, cheapness, or any other desired property without regard to wear resistance. Wherever wear occurs the hard facing process applies by welding methods a coating or edge of an alloy that has been designed specifically to resist abrasive wear. This process therefore makes it possible to use the most satisfactory metal both in regard to properties and cost for the bulk of the part, and to apply a specialized alloy in the places at which it is needed. It should be added that the better grades of hard facing alloys are brittle and weak as compared to steel;

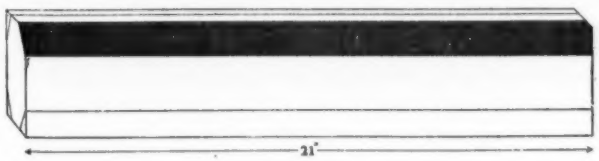

FIG. 1
Hog anvil.

hence it would be inadvisable from the point of view of performance as well as cost to make the entire part of these metals.

Economies Due to Hard Facing

The economies effected by the use of the process are both direct and indirect. Usually the cost of a new hard faced part is greater than the plain parts previously used, but often the cost is less, either because parts that have been scrapped are rebuilt and hard faced, or because the hard facing process enables the original piece to be made of cheaper metal. In any event, the cost per unit of output is less. The hard facing process results in longer life of machine parts; hence fewer replacements; and inasmuch as the active surfaces stay in better condition the machine is apt to operate more efficiently than when ordinary tools are used.

As an example of economies that may be effected in the pulp

FIG. 2
Shredder knife.

and paper industry the case of hog anvils should be considered. In one particular plant it was the practice to use high speed steel hog anvils consisting of a bar about 1 in. by 4 in. by 21 in., the anvils costing $18. After a few preliminary experiments it was found that the anvil could be made as shown in Fig. 1, using a machine steel bar, which cost $3.00, hard faced on four edges as shown in the sketch. The hard faced anvils finished, including materials and labor, cost about $20. The high speed steel anvils were changed two or three times a week, whereas the latest report on the hard faced anvil stated that it had been in use for six weeks and was then operating on its second corner, which would indicate a life of about four months. The increase in life is about ten times, or 1000 per cent, at an increased first cost of 10 per cent. Shutdowns for ninety-two replacements per year were prevented.

Chipper and Shredder Knives

Chipper knives are another successful field for hard facing. At one plant the practice had been to use hardened steel knives 1 in. by 8 in. by 12 in. that had an average life of about two days for each edge. As each knife had two edges, after about four days' service it was removed and reground, the knife being good for about four regrinds. Under these conditions the knife would have a total active life of twenty days, during which it required four removals for regrinding and eight shutdowns for replacement. When these knives were hard faced—in this instance worn knives were salvaged and rebuilt—it was found that they would last seven months before requiring regrinding or rebuilding. The

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Materials of Construction Committee.

[1] Union Carbide and Carbon Research Laboratories, Inc., Long Island City, N. Y.

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cost of hard facing these knives based solely upon the welding rod and labor required, was about $2.00, and the increase in life between replacements was about fifty times.

Shredder knives used at a certain mill for shredding sulphite board and other pulp materials were formerly made of high grade steel and cost $200 per set. A set of worn knives was rescued from the scrap pile and hard faced at a total cost of $90. This set shown in Fig 2. lasted six months as compared to one month for new steel knives, and inasmuch as they could be rebuilt continually, resulted in reducing the annual charge on a machine using one set of knives from $2400 to $180.

Throat plates for hogs are another striking example. At a mill in Michigan steel throat plates had a life of about one week. Worn plates were reclaimed and hard faced (Fig. 3) at a total cost of less than $5.00, and were then found to operate satisfactorily for six weeks, corresponding to an increase in life of 500 per cent. It was estimated that the labor cost of changing plates was $1.00; hence the hard facing was fully paid for by the elimination of five otherwise necessary replacements. Another type of throat plate had a life of only two weeks, which was extended to seven weeks by hard facing. At still another plant the tool steel throat plate formerly used cost $62. Worn plates were hard faced (Fig. 4) at a cost of about $6.00 and were found to last sixteen weeks as compared to a life of two weeks for the plain steel plate. Regrinding and changing plates cost $1.60, so that the saving in labor or replacement alone was about $10 during the life of the hard faced plate. In addition it is of course possible to salvage and rebuild worn plates almost indefinitely.

General Mechanical Equipment

At another plant the chipper chute contained a liner that is called a "half-moon." These pieces were made of steel and had an average life of about three to four weeks, after which they were scrapped. Worn parts were reclaimed by hard facing (Fig. 5) at a cost of somewhat less than $20, and after seven months' use the wear on this particular piece was so slight that it was impossible to estimate its useful life. New "half-moons" cost delivered about $63 and it is a fairly expensive operation to replace them. It can be readily seen that hard facing in this instance has resulted in an appreciable saving.

In addition to these applications, which are specific uses of hard facing in the pulp and paper industry, many other uses are found in connection with power and mechanical equipment also used in mills in other industries. In one of the paper mills centrifugal

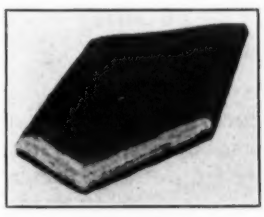

FIG. 3
Throat plate.

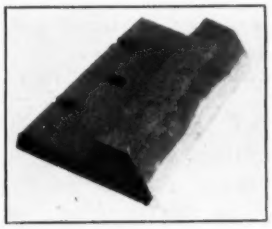

FIG. 4
Throat plate.

pumps are being used for pumping lime sludge and caustic solution. The portion of the pump shaft in contact with the packing wore rapidly, and it was necessary to tighten the packing gland about four times a day and to repack the gland about twice a week. One of these shafts was hard faced and ground and at the end of three months showed no appreciable signs of wear. During this time the packing gland was tightened only occasionally and has not as yet required repacking.

In another paper mill a certain type of boiler tube cleaner operating on compressed air was found to clean only one tube before it became worn to the point where it failed to clean thoroughly. The head or drill was hard faced and then cleaned thoroughly twenty tubes, and could be rebuilt and reground as often as necessary. (Fig. 6).

Hammers for pulverizing coal wear away fairly rapidly, but they may be rebuilt (Fig. 7) with hard facing metal at a cost of about $3.50 and will last about 2½ times as long as before. In this instance the new parts may be bought for $2; hence the

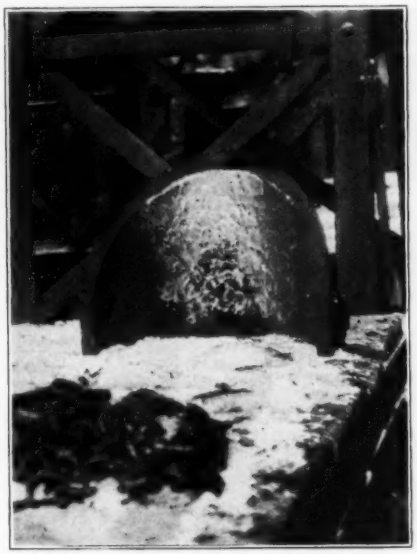

FIG. 5
Half Moon.

reclaimed and hard faced piece will cost considerably more than the new replacement parts, but the increased life and decreased number of replacements make the application economical.

Scrapers of various kinds in many industries should be hard faced. In Fig. 8 are shown scrapers for acetate rolls. Stainless steel was formerly used for this part. The worn parts were rebuilt and hard faced with an alloy combining wear resistance and acid resistant properties, and have shown a considerable increase in life over the original solid parts.

Minor parts may often be hard faced because it will eliminate trouble. In Fig. 9 is a hard facing application on a latch for automatic stake pockets for log cars. This is an application that involves very little expense for hard facing, but results in keeping small parts such as these in ideal condition for efficient operation.

In addition to these applications, the process may be used on dog plates or chain dogs for log conveyors, drag line bucket lips and teeth, block or jaw clutches and other small parts. There is no intention of giving a complete list of possible applications, but it is believed that the examples given will enable those familiar with the industry and the hard facing process to pick out places in which this process will result in operating or maintenance economies.

The examples given above should be interpreted as possibilities. They are actual records of what has been accomplished in certain plants by the use of a high grade hard facing metal. Applications in other plants will vary in results owing to local conditions, and it is often found that a few experimental installations are needed to determine the most economical application.

Hard Facing Metals

Hard facing metals have been developed with only two objects in view; the first is of course a long life when subject to abrasive wear, combined with sufficient strength; the other is that the alloy must be easily applied by the arc or welding torch. No single grade of hard facing metal is satisfactory and most

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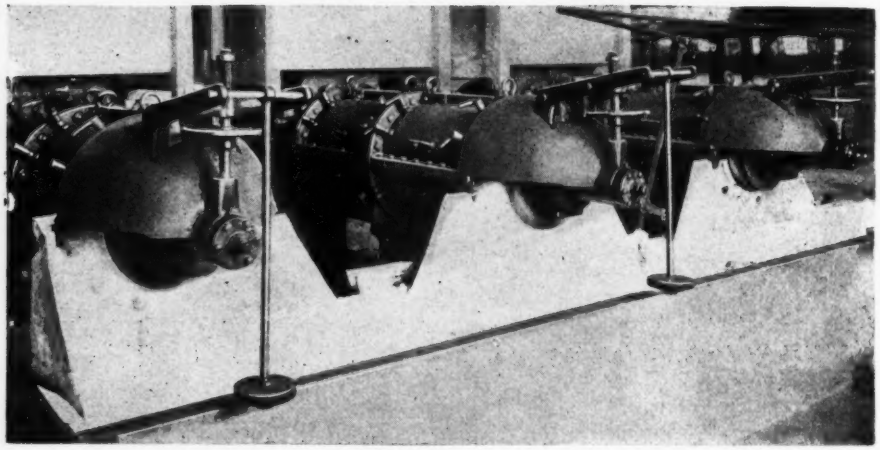

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economical for all applications; hence a large number of alloys differing considerably in properties and composition can be found on the market. For convenience the alloys may be divided roughly into five classifications.

The first of these is made up of the extremely cheap and short-lived alloys, some of which are merely hard cast irons with or without a very small amount of alloying elements. They have had but very little success and are now limited to very, very few applications.

The second class consists of metals that are essentially alloy steels. They will be found to contain such elements as chromium, tungsten, manganese, silicon, carbon, etc., bue the total of all alloying elements including carbon is usually below 20 per cent. These alloys possess greater wear resistance than any of the ordinary steels, some of them comparing favorably with Hadfield manganese steel, which is included in this class and is sometimes used in the hard facing process. If alloys of this class are used for hard facing it will be found that their life will be greater than the original steel parts, but very short as compared to the life of the harder hard facing metals. The main use of alloys in this class is as a filler rod for the rebuilding of badly worn parts. These alloys are of course much lower in price than the higher classes of hard facing metals, but they are also considerably tougher. These two properties—lower cost and toughness—make them admirably suited as a building-up material to fill badly worn spots preparatory to applying a final hard surface of a better grade alloy.

The third class consists of hard facing metals containing from 50 to 80 per cent of iron alloyed with one or more of tungsten, chromium, carbon, silicon, manganese and sometimes small amounts of cobalt and nickel. These alloys, as well as those of class four, are true hard facing metals in that they are used for the final wear resisting surface. In so far as cost is concerned the market price covers quite a range, varying probably from $1 to $2.50 per pound. These alloys are used on many applications that do not require the highest grade of wear resistance.

The fourth class consists of non-ferrous alloys of cobalt, chromium, and tungsten of which Haynes Stellite is an example. The price is considerably higher than the foregoing alloys but the increased life more than justifies the additional cost of the metal. These alloys are sold as welding rod in three different grades, all of which are highly resistant to abrasive wear but have a spread in tensile strength and toughness that makes each of them suitable for particular types of work. The particular advantage resulting from the use of cobalt instead of iron as a base for the alloy lies in a high degree of red hardness, which will be discussed below. The examples of hard facing cited in this paper were done with this alloy.

FIG. 6
Tube cleaner.

FIG. 7
Coal hammers.

The fifth class consists of the so-called diamond substitutes. These are alloys consisting of about 90-95 per cent tungsten carbide, the remainder being cobalt, nickel, iron, or similar metals added to facilitate manufacture and to give impact strength, toughness, and heat resistance to the tungsten carbide. These diamond substitutes are furnished in the form of small castings of various shapes which are welded onto the wearing surface by means of a hard facing metal. Diamond substitutes cannot be melted by the oxyacetylene flame, inasmuch as their melting points are in the neighborhood of 2500 deg. C. They are, however, readily wetted by other metals and hence may be anchored and held in place upon the wearing surface. This material is extremely hard, being almost as hard as silicon-carbide or carborundum, and reasonably close to the diamond if the values on Moh's scale are considered. It is very likely that the application of diamond substitutes, which is known as hard setting, will have only a limited use in the paper and pulp industry.

The sixth division of hard facing alloys consists of a combination of a hard facing metal and crushed tungsten carbide or diamond substitute. When diamond substitutes are used as such they are inserted as pieces approximately ⅛ inch by ½ inch. This construction is very good for many applications, but it has been found that a welding rod combining a hard facing metal and a crushed tungsten carbide is highly desirable for many uses. No specific examples for the use of this material in the paper and pulp industry can be given at present, but there will doubtless be many applications. This rod is somewhat more costly than the best of the hard facing metals, but its long life on many applications more than justifies the increased initial cost.

FIG. 8
Scrapers.

The selection of a hard facing metal should be based first on information and service records obtained from other plants or industries, but finally on competitive tests that take into account the finished cost of the piece, its maintenance, and its life, or in other words the total cost per unit of output. As a general rule, it is most economical to use the best hard facing metal available, as the higher cost is more than compensated for by longer life and fewer replacements. The plant welder should have available a true hard facing metal, probably in two grades for different jobs, and a cheaper rod of Type 2 that may be used as a filler rod for badly worn parts or for surfacing if the wear is not too severe.

Comparative Tests

There are very few instances in which it is possible to give figures on life under identical operating conditions for all of these classes of alloys, and unfortunately no such figures are available on operations in the paper and pulp industry. A series of tests made on hard faced and hard set aeroplane tail skids, which are subject to severe wear, is given in the following table:

Material	Cost	Number of Landings
Steel	$1.50	40
Hard Faced Type 4 Alloy	$4.00	400
Hard Set Diamond Sub. and Type 4 Alloy	$5.00	800

Recent experiments conducted on mills used for grinding cement show that the comparative life of Types 3 and 4 is in the order of 1 to 2.3 whereas the costs of the hard faced parts were in the ratio of 1 to 1.15.

A large number of comparative tests between two or more types of alloys seems to justify a general statement of relative life. The following figures are based on data from all sorts of uses,—agricutural plows, trimming dies, valves, cams, etc.; they are general results and are not specific data on any one job. On this basis the relative life of the various groups would be: Steel, 1; Type 2, 1.5 to 2; Type 3, 2 to 4; Type 4, 5 to 10; Type 5 and 6, 10 to 20. These figures are often exceeded, and on the other hand the minimum increase is not always attained.

The ability to resist abrasive wear depends upon the hardness of the alloy under actual operating conditions. It is well known that all friction produces heat, but it is not always realized that

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even a moderate amount of heat liberated on surfaces will produce surprisingly high surface temperatures. These temperatures may be estimated by the use of certain formulas used in mechanical engineering. They may be demonstrated by various means, one of the simplest consisting in using a pyrometer as a fiddle. If the thermocouple of a base metal pyrometer is cut at the junction, and if the two wires are played together in the nature of a violin and bow, a moderate amount of work will produce temperatures of 200 deg. F. It should be noted that these temperatures are only surface conditions and that the wires themselves do not possess any appreciable sensible heat as a result of the work done by friction; to prove this it will be found that if the wires are placed under water the same amount of work will produce the same surface temperatures. More elaborate set-ups will show that with increasing loads and speeds surface temperatures will increase until they are found to lie inside of the range of temperatures known as "red heat." It is true that these temperatures exist only while the parts are moving and only in a very thin film of metal, but if the metal becomes soft at those temperatures it will be worn away more rapidly than if it remains hard. Hence it is believed that the particular property that makes a metal capable of resisting wear is its ability to possess high hardness at red heats.

The importance of red hardness can be shown from a brief description of the history of metal cutting tools. The rate of production of machine tools has been increased by the introduction of special alloys, the order being briefly, first, plain carbon steel; second, Mushet steel; third, chromium-tungsten high speed steel; fourth, chromium-tungsten-cobalt high speed steel; fifth, cobalt-chromium-tungsten alloys, and more recently, tungsten carbide. Leaving tungsten-carbide out of the picture it will be noted that none of these alloys are harder when cold than their predecessors but they have greater red hardness and are therefore capable of cutting at higher speeds. In the same way red hardness is of value in resisting abrasion. In Fig. 10 are curves showing the hardness of five hard facing metals at temperatures up to 1800 deg. F. Four of these are iron base alloys of the type described as Type 3. The other curve shows the hardness of the cobalt-chromium-tungsten alloy listed as Type 4. It will be noted that this alloy, although softer than two of the others when cold, is considerably harder when hot. This property of retention of hardness at high temperatures is conferred by the use of cobalt instead of iron as the base of the alloy, and cannot be gone into in this paper. It should be added that the theoretical argument that superior red hardness results in greater wear resisting ability is amply supported by laboratory and shop tests.

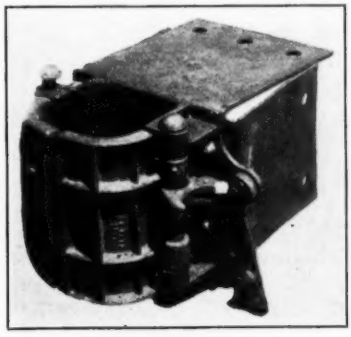


FIG. 9
Stake pocket.

Method of Application

Nearly all plants of any size have in their maintenance department welding outfits and trained welders. When such equipment is available the introduction of the hard facing process requires no expenditure except the purchase of hard facing welding rods.

Both the oxyacetylene and metallic arc welding processes are used for hard facing. Each has a particular field in which it is decidedly better than the other, and as usual there is a center ground on which both processes are applicable. It is impossible to divide the field sharply, but certain general rules may be laid down. If the job is small, especially if it is on particuar work such as a trimming die, and if the hard facing must be ground to definite shape or size, the oxyacetylene torch is undoubtedly far superior. If on the other hand the job is large and a rough surface and surface cracks are not objectionable, the arc is often preferred.

In ordinary welding it is advisable to secure a certain degree of

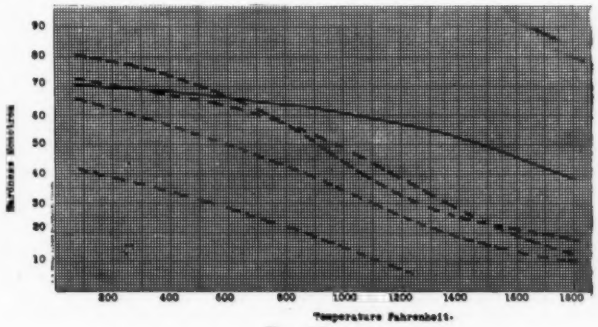


FIG. 10

interalloying, commonly called penetration, so that the two metals will be thoroughly bonded together. This is unnecessary and objectionable in hard facing because it results in dilution of the hard facing alloy. The part to be hard faced is usually a plain carbon steel. The hard facing metal is an alloy depending for its properties upon a high percentage of non-ferrous metals, and hence any dilution will reduce its ability to resist abrasion. A certain amount of interalloying is unavoidable if the arc process is used, but it can be kept at a minimum and will do but little harm. If the torch is used a hard surface can be applied with practically no interalloying of the two metals.

It should be borne in mind that hard facing is somewhat different from welding and the operator should be thoroughly instructed as to the few but important points to be observed. These can be very readily learned and any welder will in a short time be able to do excellent hard facing work.

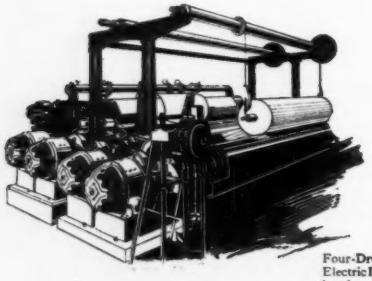
In conclusion it may be said that hard facing offers an opportunity to reduce maintenance costs and eliminate trouble in almost every industry. It can be tried in any plant at such a slight expense that it should be investigated as a means of keeping abrasive wear at a minimum.

Lubrication

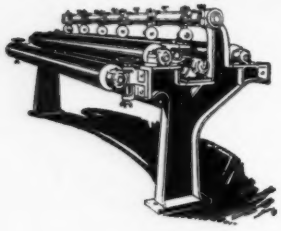
Ignorance regarding effective means of overcoming unnecessary friction losses is costing the pulp and paper mills of this continent the price of millions of tons of coal annually. Maintenance and upkeep expenses are seriously aggravated and impose an even greater burden, as do the irreparable losses due to the costly shutdowns traceable in large measure to some failure of the lubricating system. In addition, there is the limitation upon production imposed by frictional curtailment of machine speeds. In the aggregate, the price paid for avoidable friction, chiefly journal, would be found to be fairly staggering could it be properly appraised.

This does not mean necessarily that the mills should be more lavish in their use of lubricants. On the contrary, many mills are footing a considerable bill for lubricants and securing in return relatively little lubrication. The lubricant, while it may possess excellent lubricating qualities, may not be suitable for its application. It may even be quite unsuited for the demands made upon it. Also, of course, the lubricant may be of an inferior grade. As a rule, however, the lubricant has not been properly selected for the service, conditions and provisions are not suitable for its proper application or, as frequently is the case, the conditions have changed.

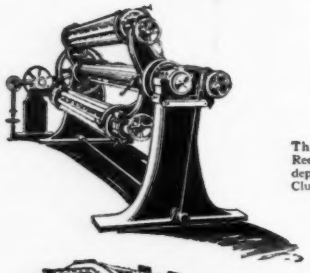
PAPER MAKING MACHINERY



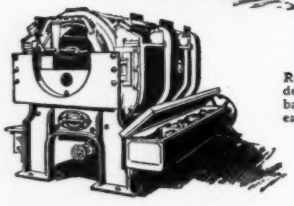
Four-Drum Winder with Electric Drive. Controls roll hardness automatically.



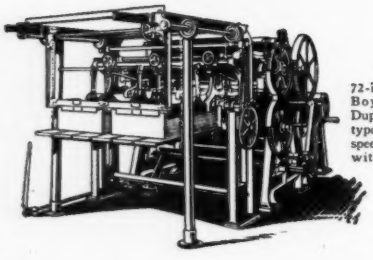
Ball Bearing Slitter Part. Quick-removable top and bottom blades give greater production with less waste.



Three-Drum Revolving Reel. Each drum has independent M&W Friction Clutch drive.



Rotary Screen, with divided diaphragms giving balanced movement and easy flow.



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List of Journals Covered

For more complete information about most of the following journals, as well as a list of the libraries in the United States and Canada in which they are currently received, see the List of Periodicals abstracted by Chemical Abstracts with Key to Library Files, published by Chemical Abstracts in 1926.

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Classification

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General
Alkaline processes
Analytical
Associations
Bagasse
Bamboo
Barkers
Bearings
Beaters and beating
Belts
Bibliography
Black liquor
Bleaching
Blotting Paper
Boards
Carbon Paper
Cellophane
Cellulose
Cellulose-Analytical
Cellulose-Viscosity
Chlorine Process
Clays
Coated papers and coating materials
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Explosion Process
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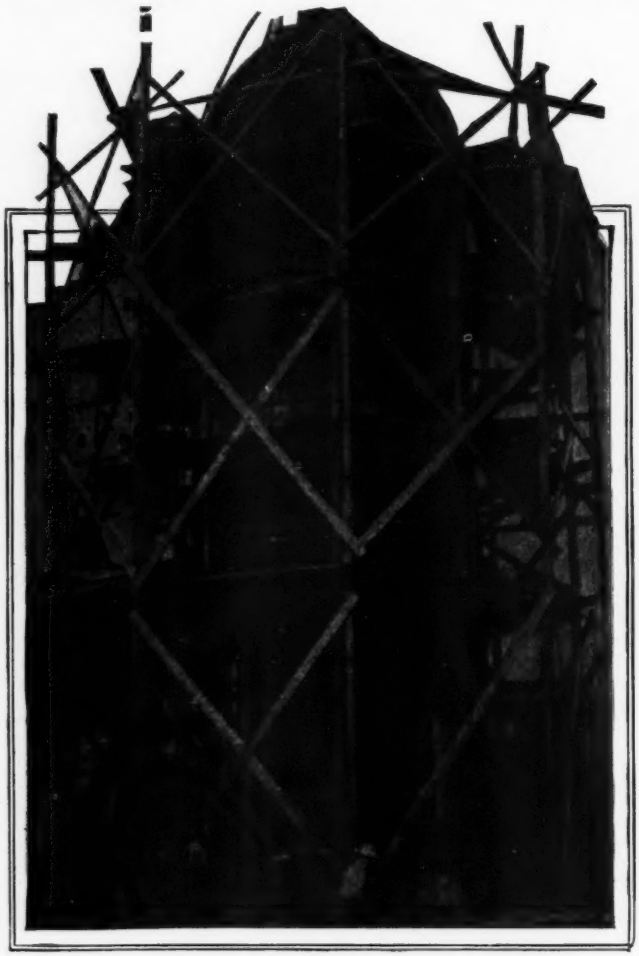
Forestry
Handmade papers
History
Hydrogen ion concentration
Insulation papers
Kraft paper
Laboratories
Lighting
Lignin
Logging
Losses
Lubrication
Machinery
Machines-Power requirement
Mechanical handling
Mechanical process
  Grinders
Mills
Nitric acid process
Paper—General properties
Paper testing
  General



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Statistics
Straw
Sulphate process
Sulphite process
Sulphite waste liquors
Technical control
Trade
Ventilation
Vulcanized fibers
Washing
Wastes
Water
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Wax papers
White water
Wires
Wood room
Woods

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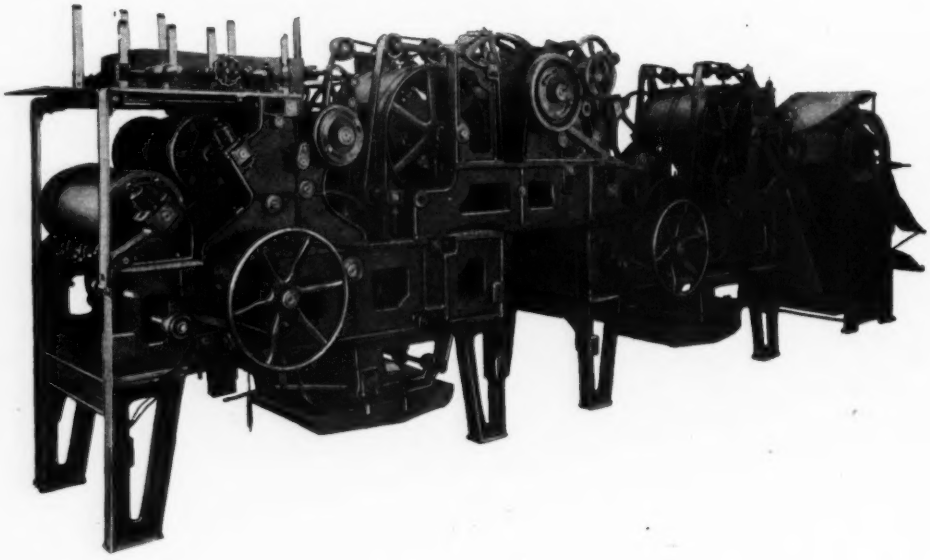

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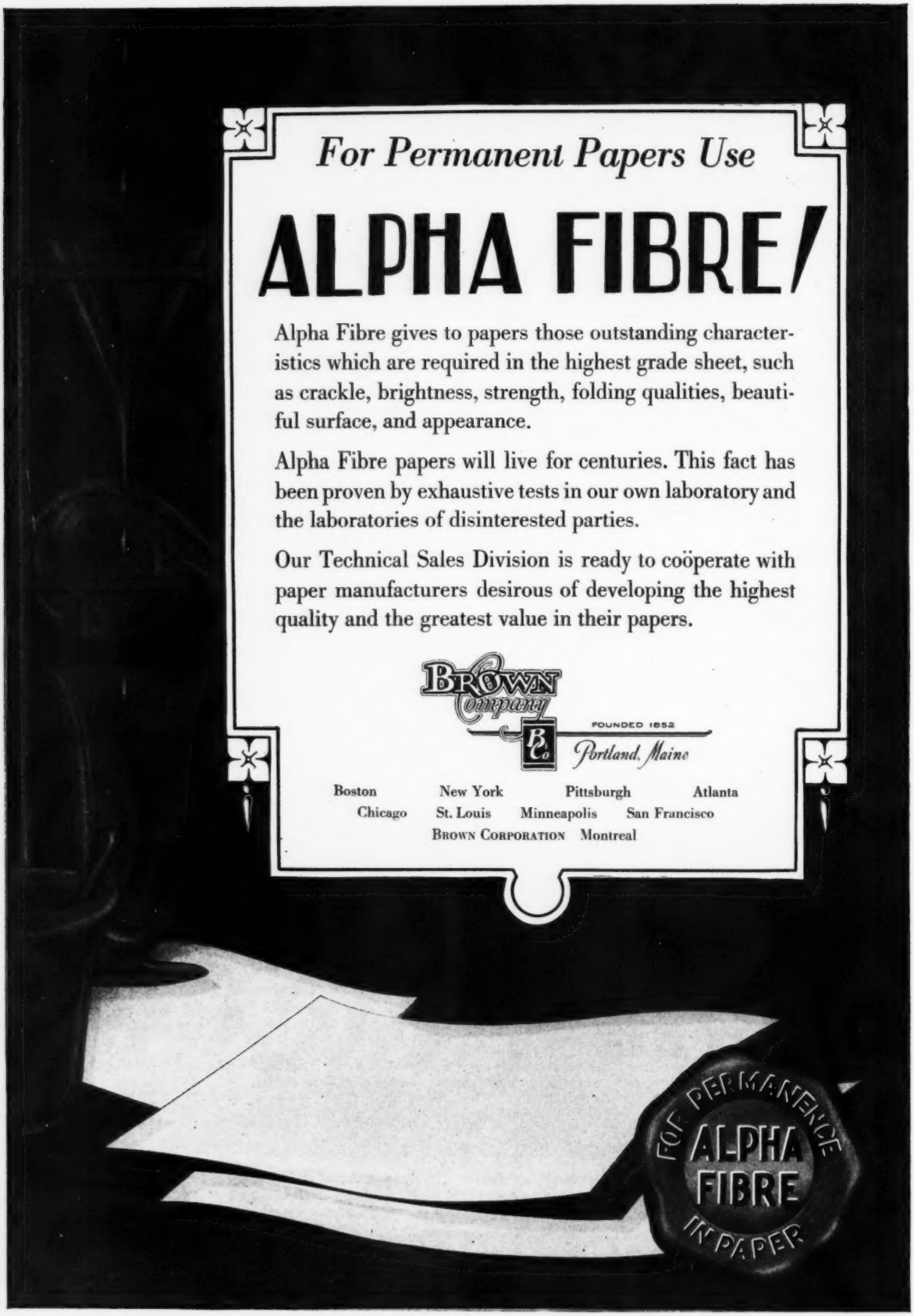

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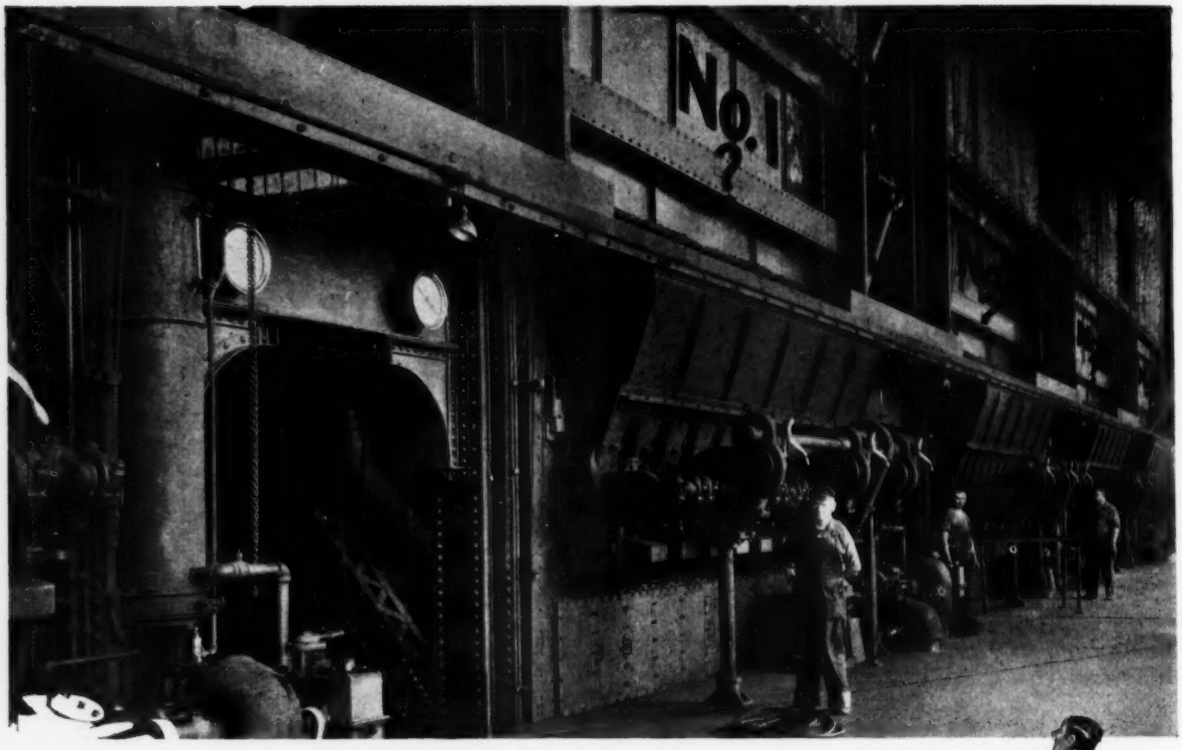

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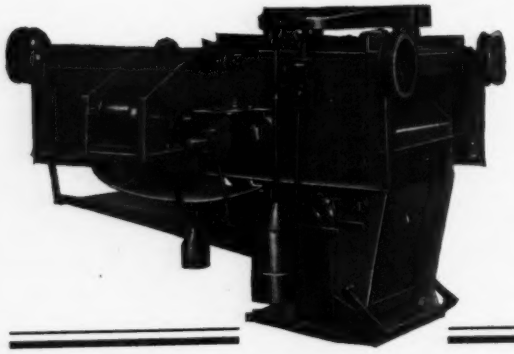

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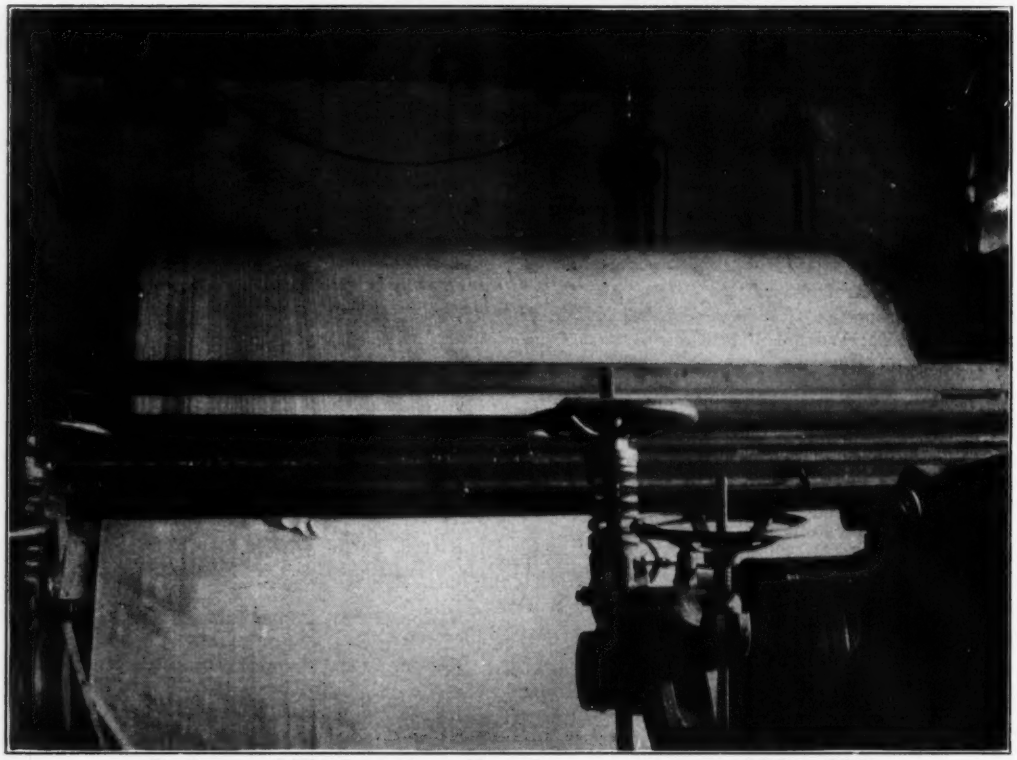

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National Paper Trade Association of the U. S. A. Holds Twenty-Eighth Annual Convention at The Pennsylvania Hotel, New York

Arthur W. Blackman, of D. F. Munroe Co., Boston, Mass., Is Elected President—J. F. Miller, of Chope-Stevens Paper Co., Detroit, Is Chosen Vice President in Charge of Fine Paper Division and S. L. Wellhouse, of National Paper Co., Atlanta, Ga., Vice President in Charge of Wrapping Paper Division —Charles Addoms of Miller & Wright Paper Co., New York, Is Reelected Treas., and F. E. Floyd, Sec.

A. W. BLACKMAN, of the D. F. Munroe Company, Boston, Mass., was elected president of the National Paper Trade Association of the United States at the twenty-eighth annual convention of the association at the Pennsylvania Hotel, New York, February 16 to 18 inclusive.

The other officers were elected as follows: Vice-President in Charge of Fine Paper Division, J. F. Miller, Chope-Stevens Paper Company, Detroit, Mich.; Vice-President in Charge of Wrapping Paper Division, S. L. Wellhouse, National Paper Company, Atlanta, Ga.; Treasurer, Charles Addoms, Miller & Wright Paper Company, New York; Executive Secretary, Frank E. Floyd, 420 Lexington avenue, New York.

In his address K. S. Warner president of the National Paper Trade Association said:—

We stand today with 1930 behind us, in the new year 1931 which is still very young. We all know that 1930 was a strenuous year and I am of the opinion that the slogan coined three years ago "Place your house in order," penetrated sufficiently so that many of our merchants found it easier to weather the storms of the past year.

Paper Business Better Than Other Lines

I think, without question, the paper industry can be congratulated. Reports that have come to me would indicate that our industry is not in as bad shape as many other lines of business. I feel that the paper merchants of the country are more liquid than they have been in years, and I am sure that stocks of our merchants on hand are low in comparison with the stocks at the close of 1929.

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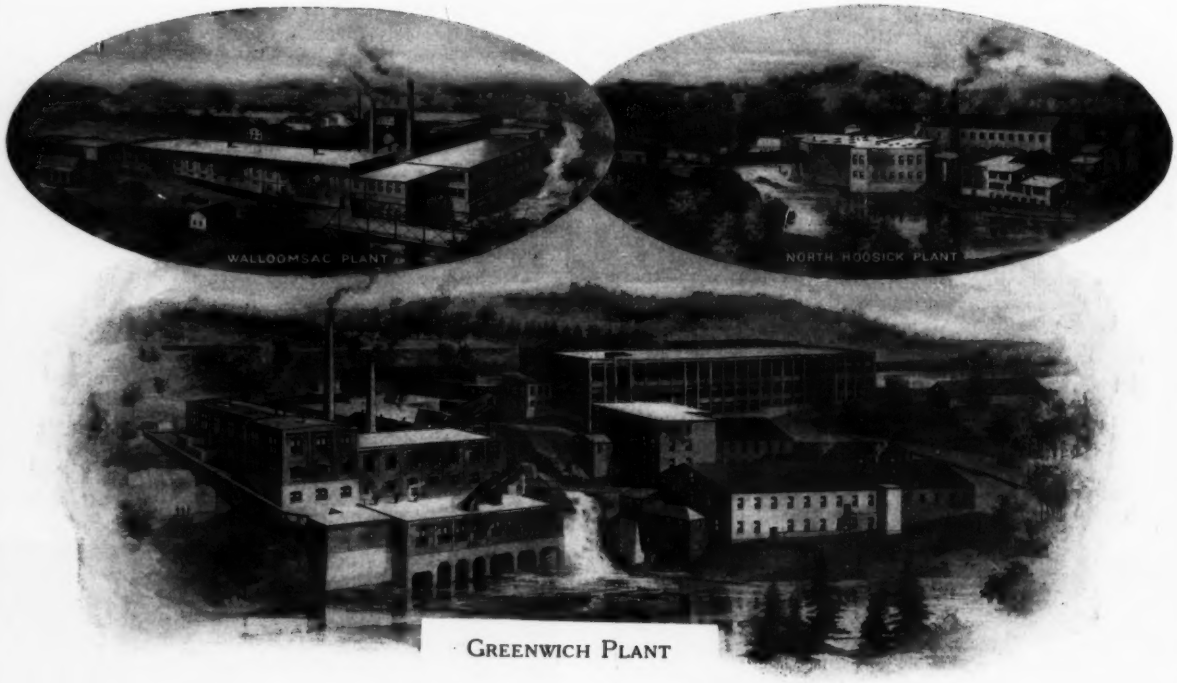

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merchandise, but this has applied largely on the lower and more competitive grades. We all know that all grades of paper present better values than heretofore and while there has been some reduction in the price of rags, and some grades of pulp, it has not happened on the standard contract grades and refers largely to spot. I believe it is safe to say that there is no legitimate reason for lower prices on the better grades; therefore with a revival of business, which must come, there will be no inventory losses.

In the wrapping paper field there has been, as you know, quite a battle for supremacy and competition has been keen. There has been so great an over-production in the general lines of wrapping papers that it seems that a stabilized market can be reached by careful means, and I am sure that is what is being done. Manufacturers in all grades know that there should be no fictitious values and out of all the chaos I believe will come a good substantial and prosperous merchandising market.

Analyze Business Carefully

There has been a strong effort on the part of all merchants to analyze their business carefully, watch their expense and do everything they could to hold up the general morale of the industry. This we should continue.

It has given me much pleasure to serve you as one of your officers for the past three years, and to have been on the job with that sterling gentleman Frank E. Floyd, who, in my opinion, is doing a wonderful job for we merchants.

I pledge myself to continue in all activities which are for the good of the Association, and I hope my successor may have the same happy contact and that you will be as generous with him as you have been with me.

Those Who Attended The Convention

Official Registration of the National Paper Trade Association

A

Addoms, Chas., Miller & Wright Paper Co., New York.
Andrews, C. Warren, Jr., Industrial Paper Co., Baltimore, Md.
Andrews, E. W., C. R. Andrews Paper Co., Pittston, Pa.
Andrews, Ross P., R. P. Andrews Paper Co., Washington, D. C.

B

Barton, B. W., Barton, Duer & Koch, Baltimore, Md.
Baxter, Wiley W., Jr., The Baxter Paper Co., Baltimore, Md.
Beck, Leon, Chas. Beck Co., Philadelphia.
Beckwith, C. L., H. W. Carter Paper Co., Springfield, Mass.
Beckwith, R. M., Minneapolis Paper Co., Minneapolis, Minn.
Beggs, G. E., Hubbs & Hastings Paper Co., Rochester, N. Y.
Bement, Edward D., Carter, Rice & Co. Corp., Boston.
Berger, Harry, The H. Berger Paper Co., Lawrence, Mass.
Bicknell, C. N., Union Paper & Twine Co., Cleveland, Ohio.
Bishop, T. S., Raymond & McNutt Co., Philadelphia.
Binford, W. W., Andrews Paper Co., Boston.
Blackman, Arthur W., D. F. Munroe Co., Boston.
Blackman, Floyd H., D. F. Munroe Co., Boston.
Blandy, Graham, 2nd., Chas. A. Esty Paper Co., Div., Worcester, Mass.
Bockardt, Henry W., Pilcher, Hamilton Daily Co., Chicago.
Boyce, Curtis W., Wisconsin Paper & Products Co., New York.
Brown, Arthur L., Diem & Wing Paper Co., Cincinnati, Ohio.
Bull, Richard S., Bradner Smith & Co., Chicago.
Burke, John C., Baltimore Paper Co., Baltimore, Md.
Butler, Walter, Perkins & Butler, Inc., Worcester, Mass.
Byrne, M. O., Whitney Bros., Inc., Boston.

C

Carpenter, Chas. H., Kansas City Paper House, Kansas City, Mo.
Carpenter, J., Kansas City Paper House, Kansas City, Mo.
Carter, Hubert L., Carter, Rice & Co. Corp., Boston.
Caskie, G. E., Jr., Caskie Paper Co., Lynchburg, Va.
Chandler, Alan, Alling & Cory Co., Pittsburgh, Pa.
Clark, C. B., Riverside Paper Corp., Appleton, Wis.
Clark, Gilbert L.,
Clements, R. M., Clements Paper Co., Nashville, Tenn.
Clerk, Geo. S., Hudson Valley Paper Co., Albany, N. Y.
Cleveland, W. G., E. C. Palmer & Co., Ltd., New Orleans, La.
Clifford, S. B., C. P. Lesh Paper Co., Indianapolis.
Cook, H. M., Vandewater Paper Co., New York.
Corning, A. J., Hubbs & Corning Co., Baltimore, Md.
Countiss, F. N., International Paper Co., New York.
Cummings, E. Lindsey, Storrs & Bement Co., Providence, R. I.

D

Damon, Allen C., Paul E. Vernon Co., New York.
Dearden, C. W., Butler-Dearden Paper Service, Worcester, Mass.
Doyle, W. F., Chatfield & Woods Co., Pittsburgh.

E

Eaton, Edward A., A. M. Eaton Paper Co., Boston.
Ebberts, Wm. E., Coy, Dishbrow & Co., Inc., New York.
Elias, Harry, Harry Elias & Co., New York.
Elliott, Roy G., Johnston Paper Co., Cincinnati, Ohio.
Epes, T. S., Epes-Fitzgerald Paper Co., Richmond, Va.
Esty, Chas. A., Carter, Rice & Co., Boston.

F

Fitzgerald, J. W., St. Maurice Valley Paper Co., Montreal, Que.
Freedman, J. N., S. Freedman & Sons, Washington, D. C.
Fuhlage, Alfred, Beacon Paper Co., St. Louis, Mo.

G

Garner, Samuel G., J. E. Linde Paper Co., New York.
Giddey, Geo. H., Beecher Peck & Lewis, Detroit, Mich.
Gillette, W. N., Chicago Paper Co., Chicago.
Grazelle, Wm. R., Holland Paper Co., Buffalo, N. Y.
Gordon, Morse, Chatfield & Woods Co., Rochester, N. Y.

H

Ham, Arthur E., Arthur E. Ham & Sons, Boston.
Ham, H. C., Arthur E. Ham & Sons, Boston.
Hanlon, Lou L., Alling & Cory Co., Buffalo, N. Y.
Hartung, A. P., A. Hartung & Co., Philadelphia.
Hearn, F. E., Hearn Paper Co., Youngstown, Ohio.
House, A. J., Union Paper & Twine Co., Detroit, Mich.
Hubbard, C. B., B. F. Bond Paper Co., Baltimore, Md.
Hubbs, Chas. F., Chas. F. Hubbs & Co., New York.
Hundley, H. S., B. W. Wilson Paper Co., Richmond, Va.
Hurlbert, Hartley A., Hurlbert & Hatfield Co., Boston.
Hyman, Harry Z., L. H. Hyman & Sons, New York.

I

Ilsen, H. G., Hubbs & Howe Co., Cleveland, Ohio.

J

Jamison, F. T., Interstate Cordage & Paper Co., Pittsburgh, Pa.
Jensen, Lothardt M., The Brinn & Jensen Co., Omaha, Neb.
Johnston, Dean Y., Chatfield Paper Corp., Cincinnati, Ohio.
Johnston, Joseph E., Globe Paper Co., Detroit, Mich.
Johnston, Robert S., Old Dominion Paper Co., Norfolk, Va.
Jones, H. L., Individual Drinking Cup Co., Easton, Pa.
Jones, J. B., Western Newspaper Union, Omaha, Neb.
Jones, Wm. A., Riverside Paper Corp., Appleton, Wis.

K

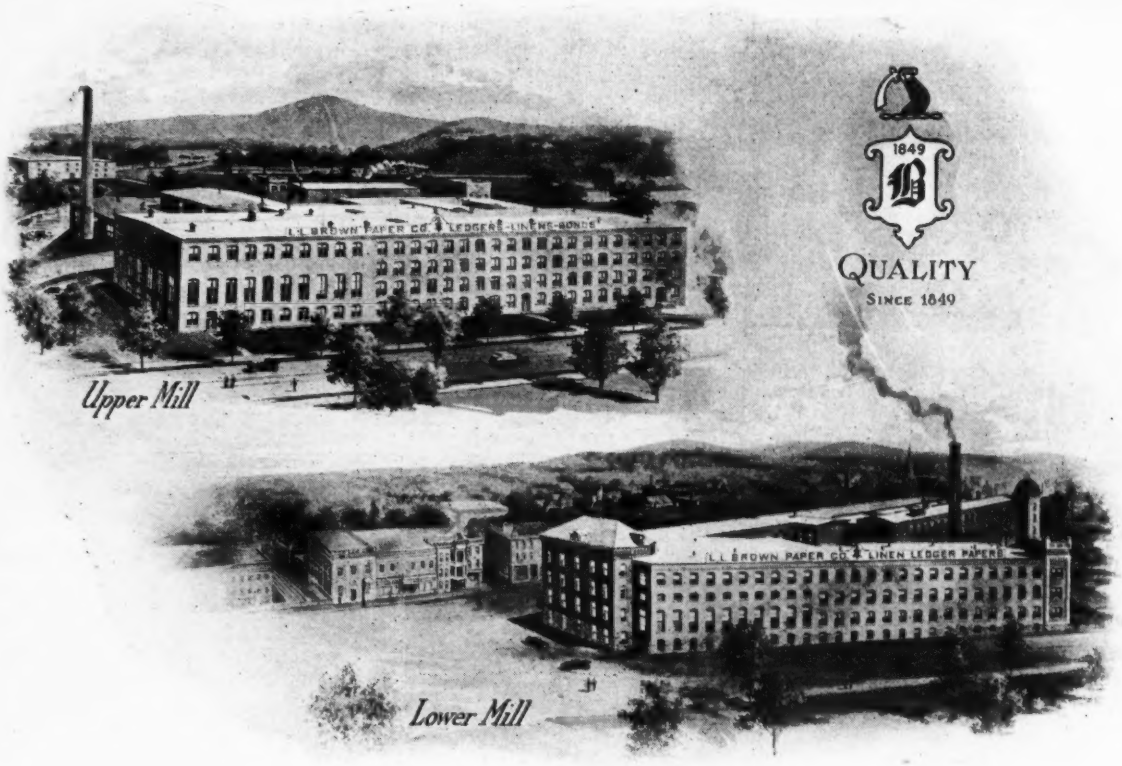
Keil, Harold W., Millcraft Paper Co., Cleveland, Ohio.
Kettles, R. C., Jr., Chas. F., Hubbs Co., New York.
Kiesewetter, M., Antietam Paper Co., Hagerstown, Md.
Kinnie, Alfred, J. E. Linde Paper Co., New York.
Knight, J. W., Knight Bros. Paper Co., Jacksonville, Fla.
Koch, Chas., Barton, Duer & Koch, Washington, D. C.
Krantz, M. L., Alling & Cory Co., Buffalo, N. Y.
Kullman, G. K., American Paper Co., Milwaukee, Wis.

L

Larsen, V. H., Crescent Paper Co., Indianapolis, Ind.
Lazenby, Eugene H., Industrial Paper Co., Baltimore, Md.
Leland, D. E., Mumford Paper Mills, Mumford, N. Y.
Lengnick, H. A., H. A. Lengnick Co., Baltimore, Md.
Lesh, Perry W., C. P. Lesh Paper Co., Indianapolis, Ind.
Leslie, A. W., John Leslie Paper Co., Minneapolis.
Lidman, M., Gotham Card & Paper Co., Jersey City, N. J.
Liebman, M., Gotham Card & Paper Co., Jersey City, N. J.
Linde, Bertram, J. E. Linde Paper Co., New York.
Lindenmeyer, Fritz, Henry Lindenmeyer & Sons, New York.
Lipscomb, B. W., Richmond Paper Co., Richmond, Va.
Loudergan, J. H., Henry Lindenmeyer & Sons, New York.

M

Mahon, L. D., B. F. Bond Paper Co., Baltimore, Md.
Mallalieu, J. C., Geo. W. Millar & Co., Inc., New York.
Maltz, O. W., Houston Paper Co., Houston, Tex.
Manly, E. T., Rising Paper Co., Housatonic, Mass.
Marquardt, Oswald F., Marquardt, Blake & Decker, Inc., New York.
Marshall, Louis J., Marshall Paper Co., Appleton, Wis.
Mathewson, H. W., The Paper Supply Co., Minneapolis, Minn.
McGehee, C. G., Jacksonville Paper Co., Jacksonville, Fla.
McKinney, Geo., F. A. Flinn, Inc., New York.
McLaughlin, W. C., Chatfield Paper Corp., Cincinnati, Ohio.
Merriam, Edward J., Merriam Paper Co., New York.
Merrill, Frank H., Andrews Paper Co., Boston.
Meyer, Karl F., Schwarz Paper Co., Lincoln, Neb.
Meyers, Karl F., Schwarz Paper Co., Lincoln, Neb.
Miller, Albert M., Central Ohio Paper Co., Columbus, Ohio.
Miller, J. F., Chope, Stevens Paper Co., Detroit, Mich.
Miller, R. W., Central Ohio Paper Co., Columbus, Ohio.
Minke, O. W., Blake, Moffit & Towne, Portland, Ore.
Moody, W. F., G. W. Moody & Son, New Castle, Pa.



Eighty one years of producing none but the very finest of papers provide an exceptional background against which to place manufacturing problems concerning special papers.

The knowledge, experience and skill derived from almost a century of unique specialization enable us to render material service in connection with high grade stocks for special purposes.

L. L. BROWN PAPER COMPANY

Ledgers, Linens & Bonds

ADAMS — MASS.

Established 1849

Morgan, C. A., Cramer-Force Co., Inc., Rochester, N. H.
Morrissett, R. E., Dillard Paper Co., Greensboro, N. C.
Mudge, E. T., 2nd, The Mudge Paper Co., Baltimore, Md.
Myers, M. D., Myers Paper Co., Memphis, Tenn.
Myers, R. E., R. M. Myers & Co., Inc., Rochester, N. Y.

N

Newell, H. T., Jackson Paper Co., Jackson, Miss.
Nolte, W. J., Consolidated Paper & Box Co., Richmond, Va.
North, H. B., F. E. Fowler Co., New Haven, Conn.

O

O'Neill, F. A., Paper Manufacturers Co., Philadelphia.
Orchard, H. C., Orchard Paper Co., St. Louis, Mo.

P

Parsons, F. T., F. T. Parsons Paper Co., Washington, D. C.
Pomerance, Michael, Forest Paper Co., New York.
Potter, Edgar L., Potter-Taylor Paper Corp., Albany, N. Y.
Pratt, D. W., Butler Paper Corp., Chicago.
Predmore, A., Paper Merchants, Inc., Philadelphia.

R

Reeves, Bert H., Alling & Cory Co., Rochester, N. Y.
Ris, Charles H., Keith Products Co., Inc., New York.
Roach, John E., Fort Hill Paper Co., Boston.
Rockwood, C. D., Union Selling Co., Cincinnati, Ohio.
Roehm, R. W., Beecher, Peck & Lewis, Detroit, Mich.
Roesch, Henry, Roesch Paper Co., Tampa, Fla.
Roesch, R., Union Paper & Twine Co., Cleveland, Ohio.
Rourke, Wm. H., Rourke-Eno Paper Co., Hartford, Conn.

S

St. Clair, W. D., Alling & Cory Co., Pittsburgh, Pa.
Schaefer, Wm. N., R. P., Andrews Paper Co., Washington, D. C.
Schlosser, Morris, Schlosser Paper Corp., New York.
Schmidt, Robert, Miller & Wright Paper Co., New York.
Schuman, Louis, Manhattan Card & Paper Co., New York.
Schwarz, C. F., Schwarz Paper Co., Lincoln, Neb.
Seinsheimer, Louis A., Seinsheimer Paper Co., Cincinnati, Ohio.
Severance, H. J., Hubbs & Howe Co., Buffalo, N. Y.
Seyler, A. H., Cleveland Paper Co., Cleveland, Ohio.
Shaw, Chas. A., Whitney Bros., Inc.
Simpson, H. A., Hubbs & Corning Co., Baltimore, Md.
Sites, D. P., Caldwell-Sites Co., Roanoke, Va.
Skinner, Geo. W. T., Skinner & Co., New York.
Sleek, R. M., Sleek-Warwick Paper Co., Kansas City, Mo.
Smith, C. Raymond, Van Reed Paper Co., Reading, Pa.
Smith, Jay K., J. & F. B. Garrett Co., Syracuse, N. Y.
Smith, Thos. J., Louisville Paper Co., Louisville, Ky.
Smythe, T. H. B., The J. L. N. Smythe Co., Philadelphia.
Starling, F. W., Seaman, Patrick Paper Co., Detroit, Mich.
Steadman, W., J. E. Linde Paper Co., New York.
Stetson, William N., Jr., Storrs & Bement Co., Boston.
Stone, Robert M., Stone & Forsythe Co., Boston.
Strauss, Raymond, American Paper Co., Inc., Richmond, Va.
Streibert, Henry, Streibert Paper Co.
Strott, Geo. H., New York Paper Co., Baltimore, Md.
Stuart, Walter H., Henry Lindenmeyer & Sons, New York.
Stuhlreyer, P. A., Diem & Wing Paper Co., Cincinnati, Ohio.
Sturm, Jerome M., Diem & Wing Paper Co., Cincinnati, Ohio.
Stutzman, Fred, Holland Paper Co., Inc., Buffalo, N. Y.
Syme, David H., Anchor Paper Co., St. Paul, Minn.

T

Tayloe, A. D., Tayloe Paper Co., Memphis, Tenn.
Tayloe, Howard, Tayloe Paper Co., Memphis, Tenn.
Thomas, A. C., F. A. Flinn, Inc., New York.
Thompson, H. D., Central Topeka Paper Co., Topeka, Kans.
Thurston, Henry B., Conrow Bros., New York.
Tobey, S. M. (Jack), Tobey Fine Papers, Inc., St. Louis, Mo.
Tracy, F. Bendel, Fort Hill Paper Co., Boston.

U

Utess, R. C., American Mfg. Co., Brooklyn, N. Y.

V

Vandyck, H. A., Chas. F. Hubbs Co., New York.

W

Wagner, C. L., J. O. Ross Engineering Corp., New York.
Waite, Harrie E., John Carter & Co., Inc., Boston.
Walter, Simon, S. Walter, Inc., Philadelphia.
Walton, Rudolph, L. S. Walton & Co.
Ward, Geo. W., D. L. Ward Co., Philadelphia.
Warner, K. S., John F. Sarle Co., New York.
Washburn, H. A., Messinger Paper Co., Chicago.
Weaver, Geo., Garrett-Buchanan Co., Philadelphia.
Webb, Geo. L., Storrs & Bement Co., New Haven, Conn.
Wellhouse, Sidney L., National Paper Co., Atlanta, Ga.
Wellington, Roger W., Alling & Cory Co., Rochester, N. Y.
Wells, Jas. L., Sloan Paper Co., Atlanta, Ga.
Welsh, R. H., Carter, Rice & Co., Corp., Boston.
Werner, D. J., Henry Lindenmeyr & Sons, New York.
White, Chas. P., Chas. F. Hubbs Co.
Whiteford, L. J., Chas. F. Hubbs Co.
Whitney, John R., Whitney-Anderson Paper Co., Springfield, Mass.
Wilcox, W. S., Wilcox, Walter, Furlong Paper Co., Philadelphia.
Wilder, C. A., Wilder Bros. Co., Philadelphia.
Wilson, Valentine L., S. Walter, Inc., Philadelphia.
Winnberg, E. N., Continental-Diamond Fibre Co., Bridgeport, Pa.
Wittrock, C. J., Paragon Paper Co., Cincinnati, Ohio.
Wolbrette, J., Southern Paper Co., Ltd., New Orleans, La.
Wright, E. E., Miller & Wright Paper Co., New York.

Z

Zellerbach, H. L., Zellerbach Paper Co., San Francisco.
Zimmerman, J. W., Standard Paper Co., Cincinnati, Ohio.

BRITISH NEWS PRINT OUTPUT REDUCED

Reduced British production of newsprint paper which marked the last three months of 1930 following a drop in the volume of advertising and in newspaper circulation is continuing into the current year, according to advices received in the Commerce Department's Paper Division from Trade Commissioner Martin H. Kennedy at London.

Production of kraft during the last quarter of 1930 was just about on a level with the preceding three months, and manufacturers generally do not expect to do much more than maintain production at the same level during the present quarter, in view of the fact that there are no new mills and only one new machine coming into production. General business condition in the kraft market at the end of the year had not changed for the better. The total unemployment in the country has increased and there has been a further shrinkage of general business, with its resulting adverse affect on the paper trade. Both newsprint and kraft prices have shown a general downward tendency, and this movement does not yet seem to have halted so far as kraft prices are concerned. Competition between domestic mills is still very strong, but the general opinion is that bottom has been reached so far as foreign kraft prices are concerned.

The United Kingdom is one of the greatest markets for paper and paper products in the world, and is exceeded in point of consumption by the United States only, and in point of production by United States, Germany, and Canada. It is estimated that there are three hundred paper mills in England, sixteen of which are given over practically exclusively to the manufacture of newsprint. Most of the news print mills are located in the Thames Valley, in the county of Kent, near London. These mills are said to operate altogether 60 machines, producing during 1930 543,129 tons (long ton of 2,240 pounds) of news print paper, which is 70,701 tons, or nearly 12 per cent short of the total capacity of the machines. In other words, the news print mills of England during 1930 operated at 88 per cent of capacity, which is estimated at 613,830 long tons. British consumption during 1930 is estimated at 825,747 tons, of which 543,125 tons represented production, 342,622 tons imports, and approximately 60,000 tons exports.

HICKS, INC. REPRESENT FLAX PULP MILLS

The flax spinning mill of J. Lemaire-Destombes & Cie in the village of St. Andre (Nord) France and probably the largest in France, has a modern pulp mill manufacturing a high grade Bleached Flax Pulp, using a by-product from its own mill. Recent installations of flax dusting machines and a water purifying system has greatly improved the quality and color of the pulp. A close chemical control is maintained to insure a uniform quality. Many of the live mills in Europe and the United States have been using this pulp with great savings in their conversion costs and mills with limited beater capacity have greatly increased their production. It is recommended as a furnish for carbon, cigarette, condenser, money paper, bonds, ledgers, writings, bristols and other high grade papers requiring linen or rag content. Since the pulp mill has been in operation it has been running to capacity and has been obliged to install additional equipment during the last few months in order to supply the demand. This mill is represented in the United States and Canada by Daniel M. Hicks, Inc., 200 Fifth avenue, New York city.

JOINS JOHN WALDRON CORP.

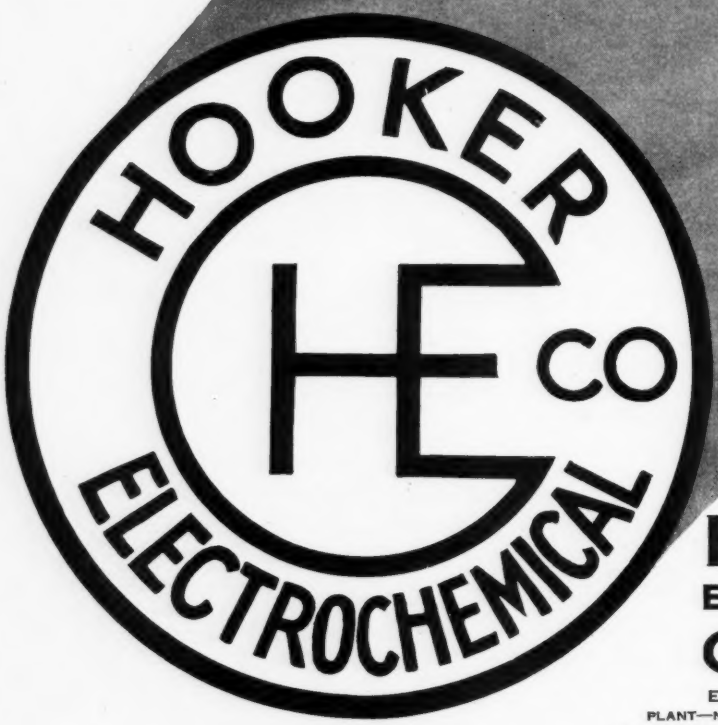
S. Newton Finney, sales engineer for many years with the Moore & White Company, of Philadelphia, has severed his connections with that concern and joined the sales department of the John Waldron Corporation, New Brunswick, N. J. For over a century the Waldron Corporation has specialized on equipment for paper converting work, and Mr. Finney will continue to call on his many friends in the mills in connection with their needs for converting equipment.

S E R V I C E

HOOKER SERVICE IS PROMPT SERVICE—IMMEDIATE DELIVERIES—INSURED QUALITY—UNSURPASSED ENGINEERING AND RESEARCH FACILITIES.

WHEN YOU BUY HOOKER CHEMICALS, YOU WILL FIND THE HOOKER TECHNICAL AND RESEARCH STAFF READY TO ASSIST AND ADVISE IN ANY TECHNICAL OR OPERATING PROBLEMS. IMPROVED METHODS AND ACTUAL ECONOMIES HAVE BEEN POSSIBLE IN MANY PLANTS THROUGH THIS PROVEN SERVICE.

HOOKER SERVICE IS BACKED BY 25 YEARS OF EXPERIENCE IN MEETING THE INDIVIDUAL NEEDS OF USERS OF CHEMICALS.



HOOKER ELECTROCHEMICAL COMPANY

EASTERN
PLANT—NIAGARA FALLS, N. Y.
SALES OFFICE: 60 EAST 42ND ST., N. Y.

WESTERN
PLANT—TACOMA, WASH.
SALES OFFICE: TACOMA, WASH.

CAUSTIC SODA LIQUID CHLORINE BLEACHING POWDER MURIATIC ACID MONOCHLORBENZENE
PARADICHLORBENZENE BENZOATE OF SODA BENZOIC ACID BENZOYL CHLORIDE
BENZYL ALCOHOL BENZYL CHLORIDE ANTIMONY TRICHLORIDE FERRIC CHLORIDE
SULPHUR MONOCHLORIDE SALT SULPHUR DICHLORIDE SULPHURYL CHLORIDE

HOOKER CHEMICALS

5325

Supply and Equipment Section Exhibition

The Supply and Equipment Section of the association has increased its activities during the year not only in meeting service demands of its members, but also in group assistance to the paper industry and its organizations. During the year a classified list of the equipment and supplies which the members produce for sale to paper manufacturers was compiled and published in an attractive booklet. This list has met the need in the industry of a small, handy compendium of paper mill supplies. It was distributed to every mill in the United States.

As a means of assisting members of the association, the section is cooperating with the parent association in helping paper mills to obtain complete technical and price information on supplies. Many paper mills have taken advantage of this service. To a greater extent than in previous years the section has contributed both time and funds to activities of the parent association. Gradually the basis of a worth while cooperation is being laid, that already is contributing much to the accomplishment of greater achievements and to the establishment of common interests in the industry.

A feature of this year's activities was the member exhibit in connection with the meetings of the American Paper and Pulp Association and allied organizations. Despite necessarily restricted space, the exhibit met a real need in permitting members of the association and of the section a better opportunity to reach a common understanding of technical and equipment problems.

Among the attractive displays exhibited at the convention were the following:

General Electric Co.

Visitors to the booth of the General Electric Company, of Schenectady, N. Y., were particularly interested in the demonstration of the Straight Line Thrust, operated by photo-electric relay.

The G. E. Mechanical Drive Turbine was also shown. Long experience in the manufacture of steam turbines, together with a practical knowledge of operating conditions, have enabled the General Electric Company to design and build this dependable turbine. It is especially adapted for direct connection to pumps, fans, etc.

Another interesting feature of the General Electric exhibit was a G. E. Induction Motor.

Bausch & Lomb Optical Co.

Paper Makers Microscopes were effectively displayed in the space occupied by the Bausch & Lomb Optical Company, of Rochester, N. Y. A feature of the exhibit was a Chemical Microscope showing fibers under polarized light. Other interesting exhibits were a Euscope, showing segregated fibers in stereoscopic relief; and an Hydrogen-Ion Colormeter for P. H. Determination.

International Nickel Co.

One of the most elaborate exhibits at the convention was that of the International Nickel Company, Inc., of 67 Wall street, New York, which consisted of Monel Metal Rods, Monel Wire Cloth, Monel Metal Winding Wire, Monel Metal Filter Cloth, and other International Nickel products, all tastefully arranged.

Du Pont Grasselli Chemical Co.

Paper Making Chemicals were displayed by the Du Pont Grasselli Chemical Company, of Cleveland, Ohio, at the booth occupied by this organization. Among the various chemicals exhibited were: Sulphite of Alumina, Caustic Soda, Soda Ash and Salt Cake.

Chromium Corp. of America

Chromium plated models, thoroughly tried out, are shown at the attractive booth of the Chromium Corporation of America, 120 Broadway, New York. Chromium, with its inherent hardness and corrosion-resisting characteristics, is producing very definite economies in many paper mills. Applicable to practically all base metals—including heretofore difficult applications on cast iron, chilled iron and semi-steels—an electrolytic chromium plate provides a surface which is not only extremely hard and resistant to corrosion but at the same time is exceptionally smooth. It is not affected by alkalis, organic acids, organic sulphur compounds, sulphur dioxide or hydrogen sulphide at any temperature. Only extreme heat, hydrochloric acid or strong sulphuric acid has any appreciable effect upon chromium plate.

International Paper Co.

The Core Department of the International Paper Company, of 220 East 42nd street, New York, displayed cores and caps of different sizes, arranged in a very artistic manner. This exhibit attracted a deal of attention at the Supply and Equipment Section's Exposition.

Allis Chalmers Mfg. Co.

At the booth of the Allis Chalmers Manufacturing Company were displayed many of the bulletins published by the organization, including booklets describing Hytork Synchronous Motors, Polyphone Induction Motors, Direct Current Motors and Generators, Thorne Barking Systems, Rod Mills for the Paper Industry, Improved Paper Stock Pumps, etc.

Republic Steel Corp.

Booklets describing Toncan Molybdenum Iron were distributed at the booth of the Republic Steel Corporation, of Youngstown, Ohio. Booklets were also displayed describing Republic Wrought Steel Pipe, Naylor Line Pipe, Arc Welding, Stainless Alloys, etc.

Cochrane Corp.

The Cochrane Engineering Service was ably demonstrated at the booth of the Cochrane Corporation, of Philadelphia, Pa. Catalogs and photographs of installations were shown. The Cochrane Corporation maintains a large engineering staff especially to study and make recommendations regarding those matters which principally control waste and efficiency in the boiler room.

Noble & Wood Machine Co.

Catalogs describing the Noble & Wood Improved Pulper are distributed at the space occupied by the Noble & Wood Machine Company, of Hoosick Falls, N. Y. The Noble & Wood Improved Pulper turns the problems of broke and waste disposal and the preliminary preparation of pulp laps into profit earners,—a statement substantiated by every mill now using this efficient engine. It converts broke and waste into pulp ready for the stuff chests without further change or mutilation of the fibers. It spares the beaters the strain of breaking up pulp laps, which it handles in their entire form, even if frozen.

Eastwood Corp.

The feature of the exhibit of the Eastwood Corporation, of Belleville, N. J., was the motor-controlled 10-inch acid-bronze Digester Blow-Off Valve of the Belleville type in operation at the booth. The remote electrical control provides the greatest possible factor of safety in operating the valve. The operating mechanism may be placed at any distance away from the valve that is desired. It provides positive, safe control.

Standard quick-opening gate valves with the swing-top were also shown at the Eastwood booth with two special operating mechanisms, one for chain operation, and the other for air or hydraulic operation. Each of these types of control again is designed to increase the ease and safety of operating the valve.

A comparatively new line of double disc gate valves was also on exhibition at the Eastwood booth. This represents in the maker's opinion a radical advance in the design of gate valves and

Super Calenders

THE latest type Textile Super Calender possesses important advantages of design and construction; interesting features are:—

Smoothness of operation at speeds up to 1000 feet per minute while running in range with Winder and Slitter.

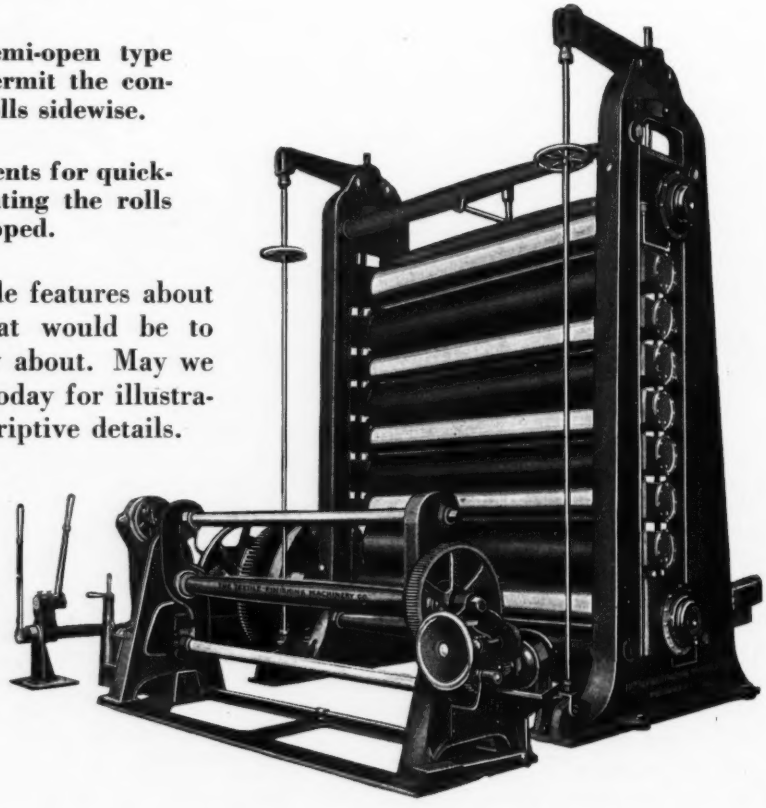
Broad range of pressures possible while operating at high speeds.

Both top and bottom rolls run in "Textile" Roller Bearings, reducing power consumption to a minimum . . . eliminating overheated bearings . . . floor about machine is kept drier and cleaner.

"Textile" massive semi-open type side frames which permit the convenient removal of rolls sidewise.

Motor lifting attachments for quickly raising and separating the rolls when Calender is stopped.

There are other desirable features about this Super-Calender that would be to your advantage to know about. May we suggest that you write today for illustrations and complete descriptive details.



9 Roll Super Calender with Textile Roller Bearings

THE TEXTILE-FINISHING MACHINERY CO.

HARRIS and SIMS AVES. PROVIDENCE, R. I.

EMBOSSING CALENDERS · COTTON AND PAPER ROLLS · SUPER-CALENDERS · FRICTION CALENDERS

has operating characteristics of great interest to operators of pulp and paper mills.

The Eastwood Corporation has been supplying the paper trade with Fourdrinier wires and cylinder cloth ever since 1877, when it started with one small building in Belleville, N. J. During most of that time they have also been manufacturing "Perfection" Acid-Resisting Bronze Valves and fittings for paper mill use.

They have recently added to their line some of the valves described above and are prepared to furnish standard valves in the special and standard alloys required for pulp and paper mill use, such as stainless steel, etc.

Permutit Co.

The Permutit Company, New York, displayed a model of a Permutit Water Softener, and a small glass demonstrator that shows how scale forming elements are taken out of boiler feed water. Another item of interest was a boiler blow-off hydrometer with a built-in temperature correction scale reading directly in degrees Beaumé. Specimens of oily condensate before and after passing through a Permutit Oil Removing Filter, and photographs of other equipment were also shown.

Cameron Machine Co.

The Cameron Machine Company, of 61 Poplar street, Brooklyn, N. Y., exhibited an interesting chart showing the action of a new gravity roll unloader, which is an automatic roll unloading device for service on high speed and wide width winders. The showing emphasizes the fact that the machine is manually controlled, simple, safe and speedy. Fifteen seconds only are required as total operating time between finish of run and depositing of rolls on floor level. Part of the exhibit was given over to a stationary display of the "Camachine" slitting and roll winding machine for use in news print mills.

W. S. Tyler Co.

An interesting display was that of the W. S. Tyler Company, Cleveland, Ohio. This consisted of a complete showing of all types of wire screens for use in paper making, as well as some samples of grades used in closely related industries. A large and comprehensive display board carried photographs and explanations of the varied uses of these products.

Moore & White Co.

The Moore & White Company, of Philadelphia, Pa., showed in actual operation a new quick removable ball bearing gear driven slitter, which is an unusually efficient unit for this work.

Beloit Iron Works

The Beloit Iron Works, of Beloit, Wis., in their exhibit supplied for distribution a complete collection of pamphlets showing action-photographs of the removable Fourdrinier and the Beloit suction press roll as well as the entire list of items made by this company.

Nash Engineering Co.

The booth of the Nash Engineering Company, of South Norwalk, Conn., was well equipped with a comprehensive group of explanatory printed bulletins describing the Jennings Centrifugal Pump, the Nash Hytor Vacuum Pump for air or gas, and the Jennings Flat Box Pump.

Bird Machine Co.

The display of the Bird Machine Company, of South Walpole, Mass., gave prominence to samples of rag bond sheets and all-rag parchment made with the use of the Centrifiner. Comparative examples of "before and after" effects were also stressed by means of two types of sand paper bond, one of which was made before and one after the installation of a Centrifiner. The Vickery Felt Conditioner catalog was also distributed from this booth.

Oliver United Filters, Inc.

Set-up mechanical devices made by Oliver United Filters, Inc., of Hazelton, Pa., were shown as part of the display of this company and the number and type of filters of this make sold for use in pulp and paper mills to December 31, 1930, was totalled on a special chart. This listing included save-alls, ground wood deckers, other deckers, thickeners, brown stock washers, re-washers and lime mud filters.

Fibre Making Processes, Inc.

The exhibit of Fibre Making Processes, Inc., of Chicago, Ill., featured a sectional "book-display" screen. On both sides of each opened leaf appeared photographs, sketches, diagrams and explanation of the type of work done by the various products of this company, with descriptions of operation. A sample of the first piece of wood barked in the first American barking drum, in 1915, was also shown.

J. E. Rhoads & Sons

An interesting stationary display of various sizes of leather belting, manufactured by J. E. Rhoads & Sons, of Wilmington, Del., was supplemented by an adequate collection of literature and by a small set-up testing apparatus.

Thew Shovel Co.

A booth which attracted much interest was that of the Thew Shovel Company, of Lorain, Ohio. As a major portion of this showing a special miniature motion picture display exhibited Thew shovels in actual operation.

E. D. Jones & Sons Co.

A special feature of the display of the E. D. Jones & Sons Company was the exhibition of the "New nap" felt conditioner, sold by Fidalgo Drying Systems, Inc., who also presented some pamphlets illustrating their improved pulp shredder, the Promi microscope, and a stock consistency regulator.

Valley Iron Works Co.

The booth of the Valley Iron Works Company, of Appleton, Wis., was given over to a very thorough presentation of their laboratory equipment, in catalog form. This company also stressed the value of the Valley Virth Screw Press and the Valley-Thune screw with flat-slotted plates.

Minton Vacuum Dryer Corp.

An unusually graphic display was presented by the Minton Vacuum Dryer Corporation, of Greenwich, Conn. This consisted of a large central blueprint showing Minton vacuum driers installed for the Weyerhaeuser Timber Company, of Longview, Wash. This blueprint appeared to excellent advantage against a background upon which photographs of the finished installation were placed.

Kalbfleisch Corp.

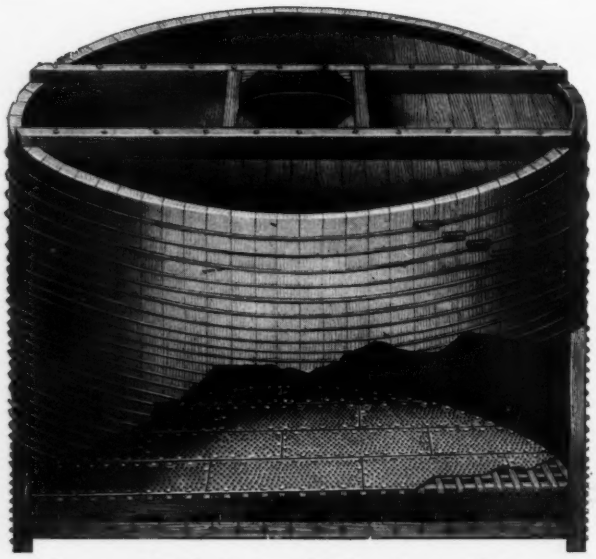
Especially effective was the display of the Kalbfleisch Corporation, of New York City. The varied and numerous paper-making chemicals in glass containers stood out vividly against a dark velvet setting and attracted much attention.

COST AND TECHNICAL MEETING MAY 22

A good program is being mapped out for the Tri-State meeting of the Cost and Technical Association of the Paper Industry, which will be held in Kalamazoo, May 22 and 23. According to Glenn Ingling, of the Kalamazoo Paper Company, chairman of the program committee, additional speakers are being added steadily. It is expected to have this program ready for distribution about May 1, when they will be mailed broadcast to those entitled to attend the local gathering. The first invitation letter is to go forward about May 1st. The local convention committee will continue its meetings right up to the opening of the gathering and will have all arrangements perfected, insuring an enjoyable and interesting conference.

INCORPORATES FOR $1,100,000

The International Pacific Pulp and Paper company has filed articles of incorporation in Portland, Ore., with a capital stock of $1,100,000, incorporators, H. C. T. Bayer, F. W. Stevens and Wm. G. Smith. Although no official announcement has been madie it is understood that this is the company previously mentioned as interested in taking over the plant in this city formerly operated as the Multnomah Lumber and Box company.



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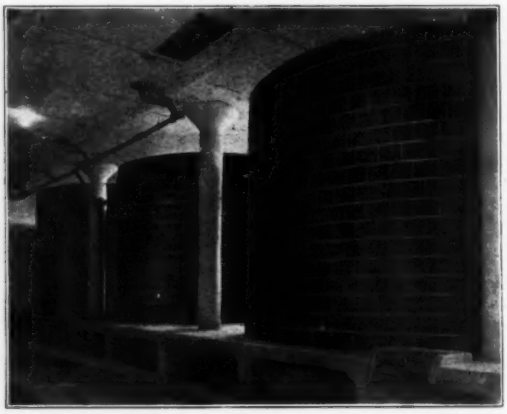
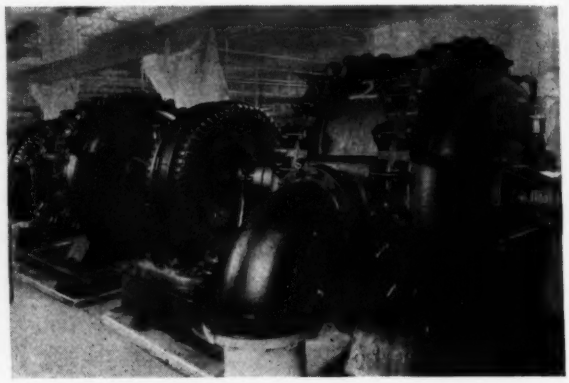


4 NASH HYTORS at Powell River



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Alexander, Jerome, New York.
Alexander, L. M., Nekoosa-Edwards Paper Co.
Allen, A. L., General Electric Co.
Allen, H. B., Babcock & Wilcox, New York.
Amlie, F. E., D. G. Jenssen Co., New York.
Anderson, L. C., Ontario Paper Co., Ltd.
Anderson, R. T., Paterson Parchment Paper Co.
Andrews, F. Raymond, Esleeck Mfg. Co.
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Austin, Edward H., Bulkley, Dunton & Co.

B

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Baker, R. S., Ottawa, Ont., Canada.
Baker, W. E. B., Castanea Paper Co.
Baker, W. N., International Paper Co.
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Baldwin, H. R., Hammermill Paper Co.
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Baron, J. V., Sherman Paper Co.
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Bearce, G. D., New Brunswick International Paper Co.
Bechard, E. N., Eastwood Corp.
Becker, Folke, Rhinelander Paper Co.
Becker, F. K., Bird Machine Co.
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Beebe, Clarence, Wire & Wire Products, New York.
Behrman, A. S., International Paper Co.
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Brown, Spencer, Rhinelander Paper Co.
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Kennedy, G. F., Hercules Powder Co.
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Kent, C. H., Mansfield Kent & Bolton.
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Kidder, W. K., Allied Paper Mills.
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Kiely, Helen U., American Writing Paper Co., Inc.
Kier, H. G., Packing & Shipping, New York.
Kimball, H. S., Waban, Mass.
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Lowe, Jos. A., Falulah Paper Co.
Lucey, W. S., Grays Harbor Corp.
Lyman, E. R., Missisquoi Corp.

M

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Macklem, G. A., Beloit Iron Works.
Macklem, W. W., Black-Clawson Co.
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Maltz, I. B., Houston Paper Co.
Mansfield, E. K., Robert Gair Co.
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Milne, T. R., Du Pont Rayon Co.
Minor, Jessie E., Rag Content Manufacturers Association.
Minton, Ogden, Minton Vacuum Dryer Corp.
Mitchell, H. B., Link Belt Co.
Mitendorf, T. H., Mid-States Gummed Paper Co.
Molsberrg, M. V., General Electric Co.
Moon, D. G., International Paper Co., New York.
Moore, Arthur W., Shawmut Waxed Paper Co.
Morey, H. A., Scott Paper Co.
Morgan, H. W., Oxford Paper Co.
Morrill, Ralph H., Chemical Paper Mfg. Co.
Morris, H. C., Hercules Powder Co.
Morrison, F. J., Hummel-Ross Fibre Corp.
Morrison, H. A., Oliver United Filters.
Morse, G. S., Valley Paper Co.
Motschman, F. W., International Paper Co.
Moyer, M. E., West Carrollton Parchment Co.
Mueller, C. E., Paper Makers Chemical Corp.
Mueller, W. J., Orono Pulp & Paper Co.
Munroe, Charles F., Franklin Paper Co.
Munroe W. A., Munising Paper Co.
Munroe, W. E., Groveton Paper Co.
Murchison, D. C., Murchison & Howell.
Murdock, H. R., Champion Fibre Co.
Murer, P. J., Canadian International Pulp Co.

N

Neese, E. H., Beloit Iron Works.
Neumeyer, William E., Neumeyer & Diamond Co.
Nicholson, Gunnar.
Nivling, W. A., Huron Milling Co.
Nixon, W. L., Moore & White Co.
Noble, J. H., Oliver United Filters, New York.
Nordenswan, C. J., Hercules Powder Co.
Norris, N. H., Western Electric Co.
Norriss, A. G., Timken Roller Bearing Co.
Norton, W. J., American Writing Paper Co., Inc.
Noyes, H. G., Wisconsin Vocational Schools.
Nunez, V. E., Nashua Gummed & Coated Paper Co.
Nyitray, Albert A., Eastwood Corp.

O

Oberweiser, E. A., Whiting-Plover Paper Co.
O'Brien, J. J., The Paper Mill.
O'Connor, J. J., Mead Corp.
Oechale, G. A., Dill & Collins Co.
Olafsen, A., Waterfalls Paper Mills Co., New York.
O'Rourke, L. A., Eaton Paper Co.
O'Rourke, F. W., Eaton Paper Co.
Osborne, M. C., Dilts Machine Works.
Ostrander, G. N., Finch, Pruyn & Co.
Owens, Elwin J., Geo. W. Wheelwright Paper Co.

P

Pagenstecher, Felix, Bryant Paper Co.
Parker, C. W., Sitka Spruce Pulp & Paper Co.
Parsons, J. L., Hammermill Paper Co.
Patch, Clifford, Eastern Mfg. Co.
Pattillo, D. K., Clinton Corn Syrup Refining Co.
Pattison, R. W., American Writing Paper Co., Inc.
Pease, R. L., Brownville Paper Co.
Peterson, C. E., Riegel Paper Corp.
Peterson, F. C., New York State College of Forestry.
Peto, C. B., Hammermill Paper Co., New York.
Peto, C. B., Hammermill Paper Co.
Phillipp, H., Solvay Process Co.
Phillips, W. A., Mathieson Alkali Works.
Phipps, C. H., Watab Paper Co.
Pierce, T. E., U. S. Envelope Co.
Piper, W. E., The Dorr Co., New York.
Pirie, Joseph, Fox River Paper Co.
Plumstead, J. E., Jessup & Moore Paper Co.
Post, C. F., E-Z Opener Bag Co.
Post, L. D., Paper Mill, New York.
Prouty, J. E., United Paper Co.

Q

Quirk, D. L., Jr., Peninsular Paper Co.

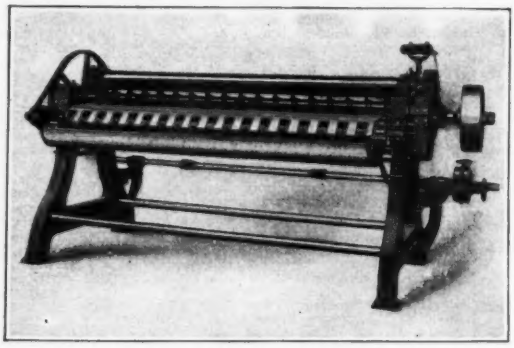
R

Radsch, R. M., Appleton Machine Co.
Raeber, B. J., Label Mfg. National Association.
Rafton, H. R., Raffold Co. of America.
Ramage, James B., Franklin Paper Co.
Ramsey, J. B., Jr., Ramsey Paper Co.
Ramsey, James G., Jessup & Moore Paper Co.
Ranck, C. W., Crystal Tissue Co.
Randall, A. T., Eaton, Dikeman Co.
Randall, W. D., Champion Coated Paper Co.
Rappolt, H. G., J. O. Ross Engineering Corp., New York.
Raybold, W. J., Rising Paper Co.
Raymond, Charles, Charles P. Raymond Service.
Raymond, W. L., International Paper Co., New York.
Reale, G. F., Hooker Electro Chemical Co.
Redfield, A. W., Munising Paper Co.
Recknagel, A. B., Empire State Forest Products Association.
Reece, C. L., Rag Content Manufacturers Association.
Reed, E. O., Crane Co.
Reed, R. F., Lithographic Technical Foundation, University of Cincinnati.
Reed, R. S., General Electric Co.
Reider, B. I., Victoria Paper Mills Co.
Reilly, James A., American Writing Paper Co.
Renner, O. W., Standard Paper Mfg. Co.
Reynolds, Howard H., Hurlbut Paper Co.
Reynolds, L. C., American Writing Paper Co.
Rhoads, C. E., Scott Paper Co.
Rhoades, J. F., Mead Corp.
Rhodes, C. F., International Paper Co.
Richter, A. F., Stebbins Engineering & Mfg. Co.
Richmond, O. P., Strathmore Paper Co.
Richter, C. F., Stebbins Engineering & Mfg. Co.
Richter, H. W., G. O. Jenkins Co.
Rieg, J. B., Erving Paper Mills.
Riggs, H. E., Strathmore Paper Co.
Rivise, C. W.
Robertson, R. B., Jr., Champion Fibre Co.
Robinson, C. P., Borregaard Co., New York.

DIETZ TOILET PAPER CONVERTER

Noted for
Production,
Precision,
Economy,
Ease of Operation,
Safety.

Equipped with Pasting Device



Rolls can be made without perforations if desired.

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Capable of producing 70 or more cases of crepe paper towels, junior or senior size, in 8 hours.

An engineered product, with high quality workmanship, and smooth operating. Can be furnished with integral 1 H.P. Motor Drive or open pulley.

Builders also of

Slitting and Rewinding Machines
Drop Roll Slitting Machines
Rotary Card Cutters
Toilet Roll Tighteners
Automatic Wire-Stitched Toilet Roll Core Machines
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Special Machinery Built to Order

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A few years ago we brought out the TENAX FELT—

Our growth has proven the superiority of the TENAX idea.

We design and manufacture TENAX FELTS to meet specific conditions for all kinds of paper and board.

Mills never having used our TENAX FELTS should write us today.

TENAX FELTS are manufactured only by

LOCKPORT FELT COMPANY

Newfane New York

Roe, W. Otis, Individual Drinking Cup Co.
Roff, A. J., Republic Steel Co.
Rogers, H. W., General Electric Co.
Roos, Chas. T., National Aniline & Chemical Co.
Ross, J. H., Forest Products Laboratory.
Ross, Lawrence, Union Bag & Paper Co.
Rossman, Joseph, Patent Office, Washington, D. C.
Rue, J. D., New York.
Russell, W. G., American Writing Paper Co., Inc.
Ryland, James F., Standard Paper Mfg. Co.

S

Salisbury, J. H., Paper & Textile Machinery Co.
Schadt, Geo. L., New England Laboratories.
Schafer, E. R., Forest Products Laboratory.
Schmidt, Henry D., Schmidt & Ault Paper Co.
Schniewind, H. Z., Foreign Paper Mills, New York.
Schot, F. J., Castanea Paper Co.
Scully, R. T., General Electric Co., New York.
Seaman, Frank P., C. M. Royce Paper Co.
Sheldon, Ben I., M. Gottesman & Co.
Shenk, Michael S., National Adhesives Co.
Shepherd, John B., Peninsular Dryer Co.
Sherlock, V. J., Howarth Paper Co.
Shotwell, J. S. G., Canadian Pulp & Paper Association.
Shoults, D. R., General Electric Co.
Sigel, Arthur J., M. Gottesman & Co.
Simmons, R. H., New York.
Sinclair, H. M., American Tissue Mills.
Sites, D. P., Caldwell Sites Co.
Smith, Albert R., Keith Paper Co.
Smith, C. B., Huron Milling Co.
Smith, M. L., New York.
Smith, P. L., National City Co., New York.
Snell, R. M., Paper Makers Chemical Corp.
Soderberg, F. A., General Dyestuff Corp., New York.
Southan, A., Kalamazoo Vegetable Parchment Co.
Spickerman, C. W., Whiting-Plover Paper Co.
Spencer, G. H., Minton Vacuum Dryer Corp.
Spencer, Otis, Jr., Locomotive Terminal Supply Co.
Stadley, John.
Stagemyer, R. H., Penn Fibre Co., New York.
Stamm, F. C., Upson Co.
Standerwick, R. G., General Electric Co.
Stannard, J. H., International Paper Co.
Stark, Henry W., Rexford Paper Co.
Stedman, B. K., Standard Paper Co.
Stevenson, Wm. F., Moore & White Co.
Stevenson, L. T., Mountain Mill Paper Co.
Stone, Norman S., Mosinee Paper Mills Co.
Story, Austin P., Chillicothe Paper Co.
Stuart, Kimberly, Neenah Paper Co.
Sturgis, R. B., J. E. Rhoads & Sons.
Summers, B. S., Michigan Steel Casting Co.
Sunshine, Wm. H., Tarentum Paper Mills.
Sutherland, D. Manson, Jr., Trenton, N. J.
Swanson, W. H., Kimberly-Clark Corp.
Switzer, P. D., Moore & White Co.

T

Tatum, C. P., Martin Cantine Co.
Taylor, Alden R., William L. Barrell Co.
Taylor, F. E., Advertisers Paper Mills and Taylor-Logan Co.
Taylor, K. A., Oxford Paper Co.
Taylor, M. J., Hoberg Paper & Fibre Co.
Teaze, M. H., H. S. Ferguson.
Telfer, H. R., Detroit Sulphite Pulp & Paper Co.
Thickens, J. H., Masonite Corp.
Thom, Ed. J., Howard Smith Paper Mills.
Thomas, B. M., Container Corp. of America.
Thompson, H. L., Nashua River Paper Co.
Thompson, James, U. S. Envelope Co.
Thompson, L. A., Paper Makers Chemical Co.
Thompson, Sanford E., The Thompson & Lichner Co.
Thorne, C. B., Canadian International Paper Co.
Thorsen, K. M., Central Paper Co.
Thwaite, Herbert, Tissue Paper Manufacturers Association.
Townsend, C. W., Logan Swift & Brigham Env. Co. Div.
Torre, Paul, Staley Sales Corp.
Traquair, John, Mead Corp.
Trautschold, R., PAPER TRADE JOURNAL.
Tremaine, B. K., DuPont Co.
Trude, A. Edward, Falulah Paper Co.
Tucker, E. F., Canadian Stebbins Engineering & Mfg. Co.
Tucker, E. G., Crocker-McElwain Co.
Tumy, P. Y., General Electric Co.
Tunstall, H. W., A. M. Collins Mfg. Co.
Turner, E. A., International Nickel Co.

U

Uong, D. D., Fitchburg Paper Co.
Upham, S. A., Brownville Paper Co.
Utess, Robert C., American Mfg. Co.

V

Vanderberg, H. L., Staley Sales Co.
Van Horn, J. B., Holyoke Card & Paper Co.
Vaughn, Frank, Bay West Paper Co.
Venturini, J. B., Cameron Machine Co.
Vicario, C., Nash Engineering Co.
Viergiver, C. D., Stecher Litho. Co.
Von Hazmburg, R. S., Scott Paper Co.

W

Wade, J. M., General Electric Co.
Wadham, C. K., Z. & W. M. Crane Co.
Wadleigh, G. R., West Virginia Pulp & Paper Co.
Wagner, C. L., J. O. Ross Engineering Corp.
Walker, E. M., American Writing Paper Co., Inc.
Walker, H. E., Reading Paper Mills.
Walleck, J. H., Northern Paper Mills.
Walsh, Thomas C., Hollingsworth & Vose Co.
Wansker, H. A., Freland, Wansker, Bates & Lawrence.
Ward, J. M., Detroit Sulphite Pulp & Paper Co.
Ware, G. A., New York.
Wellington, M. A., Fletcher Paper Co.
Waring, Arthur B., Port Huron Sulphite & Paper Co., New York.
Warner, W. J., Marvellum Co.
Watts, R. N., Cheney Bigelow Wire Works.
Weber, O. L. E., Watab Paper Co.
Webster, W. T., J. O. Ross Engineering Corp., New York.
Weed, W. J., Electro-Bleaching Gas Co.
Wehmer, D. F., Electrical Testing Laboratory.
Wehmhoff, B. L., U. S. Government Printing Office.
Wemple, H. R., Texas Gulf Sulphur Co.
Wennberg, E. N., Continental-Diamond Fibre Co.
Wenz, K. F., Champion Coated Paper Co.
Wesley, John A., Rhinelander Paper Co.
West, F. D., Paradon Co.
Westad, R. G., Borregaard Co., New York.
Weston, Donald M., Byron Weston Co.
Weston, D. P., Esleeck Mfg. Co.
Weston, H. E., Paper Industry.
Wheeler, G. S., White Mountain National Forest.
Whiteley, Fred P., Howard Paper Co.
Wierk, Frederick, Johnson & Wierk, New York.
Wilkins, R. A., Bird & Son.
Wilkinson, W. N., Supply & Equipment Section.
Wilks, Paul, Strathmore Paper Co.
Willetts, W. R., Western Electric Co.
Williams, Dexter B., Williams Size & Service Corp.
Williamson, G. E. Strathmore Paper Co.
Willson, S. L., American Writing Paper Co.
Wing, William C., Fox River Paper Co.
Wingate, H. A., C. H. Dexter & Sons.
Winslow, F. E., General Electric Co.
Wintgens, Henry G., Hoberg Paper & Fibre Co.
Wissler, W. A., Union Carbon & Carbide Co., Long Island City, N. Y.
Wolf, R. B., International Bleach Co.
Wood, L. G., Northern Paper Mills.
Woodson, W. S., U. S. Rubber Co.
Wooldridge, R. C., Bogalusa Paper Co.
Worm, E. A., Jr., Armstrong Cork Co.
Wright, J. C., Federal Board for Vocational Education.
Wyatt, G. D., Paper Industry, New York.
Wylie, H. M., Nash Engineering Co.

Y

Yanss, Geo. W., Eastwood Corp.
Youtz, M. A., Northern Paper Mills.

LOCKPORT FELT 40 YEARS OLD

The Lockport Felt Company staged one of the most brilliant affairs and royal entertainments known in the town of Newfane, N. Y., Friday evening, February 6, celebrating the fortieth anniversary of the incorporation of the firm, the 35th anniversary of Joseph Robinson as superintendent and mill manager, the 25th anniversary of William H. Lee of Lockport, as secretary-treasurer and general manager, and the dedication of the new 112 by 80 foot addition to the weave room which has just been completed.

William H. Lee, speaking of the growth of the Lockport Felt Company said in part, "This occasion marks more than a dedication of another new addition to our factory, it also recalls a group of incidents, with February 6 as an important day and month. Forty years ago tonight the company was organized to manufacture paper makers' felts. It also happened that 35 years ago today Joseph Robinson entered the employ of this concern, as its superintendent, and I, myself, on February 6, in 1905, came to the company, and tonight we dedicate another improvement."

Mr. Lee giving a resume of historical facts from old minutes on files said, "Among the first shipments of felts of the pioneer days were 155 during the year, weighing 4,257 pounds, valued at $4,559.05. Year after year of steady growth, the figures of prosperity show that in 1929 we shipped twenty-five times more than when the mill was first established. We have shipped as high as 6,543 pounds in a day. The plant since 1916 when the present organization was effected, has been completely remodeled with modern equipment and new machinery, quadrupling the capacity of the mill, which does not include the new addition, also since 1920 an administration building has been added, and not including the latest erection the total floor space is 110,000 square feet."

Mr. Lee said, "When Mr. Robinson came we had three looms and one set of cards. Today we have 22 looms in operation and five more ordered and there are seven sets of cards. In the new room will be housed the widest American board felt loom in the United States."

The records of the company show that the labor turn-over is negligible and that it never loses an employee except through death or old age. In taking an inventory of the employees of the company it was found that over 90 per cent have been with the company for over ten years and the other ten per cent from fifteen to thirty-five years.

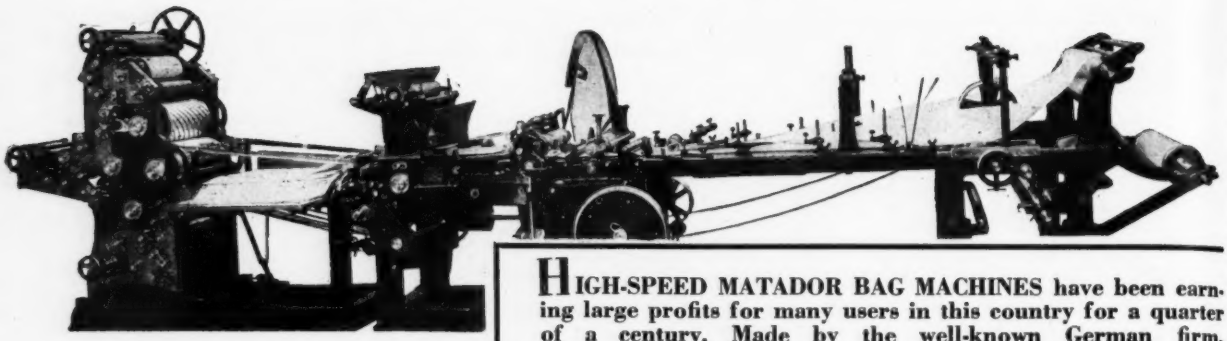
FITCHBURG SCREEN PLATE CO. CHANGES

In order more efficiently to care for a steadily expanding business, the Fitchburg Screen Plate Company of Fitchburg, Mass., previously wholly owned and operated by Walter S. Hall, has been incorporated under a Massachusetts charter. Several men, well known to the pulp and paper trade, have become associated on the directorate of the new corporation and Bartow Crocker of Crocker, Burbank & Co. has been elected president.

From an exceedingly modest start, the Fitchburg Screen Plate Company has progressed steadily, enjoying an ever increasing business in its New Type Plate (Patented) which is now being used, not only in this country and Canada, but in every country in the world in which pulp and paper are made.

The Fitchburg Screen Plate Company has a modern foundry and plant with equipment and machinery to manufacture, not only its own New Type Plate, but every kind and type of screen plate flat or curved, used in the manufacture of paper or board.

The Morey Paper Mill Supply Company of Boston with resident agents in Kalamazoo, Dayton, Watertown and Oswego will act as sole selling agents for the products of the new corporation.



180 to 200 CELLOPHANE BAGS per minute from Standard MATADOR BAG MACHINES

without special equipment

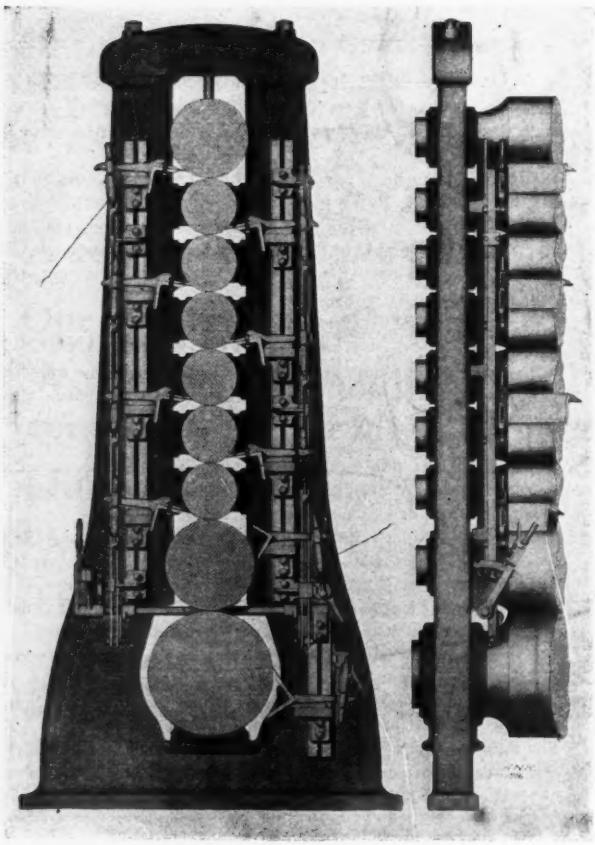
HIGH-SPEED MATADOR BAG MACHINES have been earning large profits for many users in this country for a quarter of a century. Made by the well-known German firm, Windmoller & Holscher, who have been making bag machines for over sixty years, Matador Machines have earned a wonderful reputation. Now that they can be used for making Cellophane Bags, they are even more profitable than in the past, particularly because of recent improvements which make them more productive than ever before.

The present Matador Machines can be equipped with built-in units for printing up to three colors, with oil-base inks. For printing with aniline inks, which dry instantly and permit operation at maximum speeds, we now offer our Improved Aniline Printer. This unit, printing on the web, can be used with any bag making machines. It prints in three colors, on all surfaces of the bag.

The standard Matador Bag Machine is made in four sizes, with reel widths of 28″, 38″, 49″, and 59″. The Baby Matador, with a reel width of 22″, operates at speeds up to 400 bags per minute.

Complete information will be mailed on request.

H. H. HEINRICH, INC., 15 Park Row, New York



WARREN IMPROVED CALENDER DOCTORS

With Flexible Blades, Universal Adjustment and Control

Patented in United States, Canada, Great Britain, France, Germany, and Other European Countries.

The Doctors can be operated into or off working position by limited rocking motion controlled by hand lever which locks all Doctors by latching into adjustable quadrant. The pressure applied on Doctors is evenly distributed over every inch of every Doctor by means of universal connection of Doctors with adjustable quadrant and hand lever, the Doctor being properly balanced so as to assure easy operation. The flexible blades conform to the rolls giving perfect doctoring effect with minimum pressure. Doctors may be operated on continuously without scoring or injuring the polished surface of the rolls. Individual Doctors may be unlatched and rocked away from the rolls for cleansing purposes without interfering with universal control of other Doctors. Doctors are constructed of steels, light and strong, and may be fitted to any type of paper machine calender.

Manufactured in the United States by

TICONDEROGA MACHINE WORKS

Ticonderoga, N. Y.

Sherbrooke Machinery Co., Limited, Sherbrooke Quebec, Canada

Licensed Manufacturers for the Dominion of Canada

Resolutions Adopted at A.P.& P.A. Convention

The following resolutions were adopted at the annual meeting of the American Paper and Pulp Association Thursday:

Courtesy

Be It Resolved, that the American Paper and Pulp Association extend to the officers, members of the Executive Committee, and the members of the Association Committees, its sincere thanks for their personal efforts and assistance in the interests of the whole paper industry and in reorganizing the Association that it might more fully meet its obligations to the industry, and

Be It Further Resolved, that the American Paper and Pulp Association express its appreciation for the loyalty and the service of the Association staff during the current year.

Use and Furtherance of Statistics

Be It Resolved, that the American Paper and Pulp Association urge every mill in the industry to participate in the statistical work of the industry's associations in order that all may be properly informed as to market conditions, and,

Be It Further Resolved, that the American Paper and Pulp Association continue the organization of groups in the industry for the purpose of developing statistical services in order that each group may have, in addition to the general statistics of the industry, its own detailed current records, whereby each may better guide its operations; that when called upon the Association continue to assist the group associations in compiling statistics for their members; and that the American Paper and Pulp Association be authorized to continue as an Association activity the statistical service of any group association that through any cause may discontinue its member service, if such action is desired by the interested mills.

National Timber Conservation Board

Be It Resolved, that the American Paper and Pulp Association extend to the National Timber Conservation Board its fullest cooperation in studying the forest supply and use problem of the United States in its effort to formulate means of forest use to which the dependent industries may be adjusted to the end that overproduction, now disastrous alike to the influenced industries and to the public welfare may be lessened and controlled, and

Be It Further Resolved, that the American Paper and Pulp Association urge all forest owning companies in the industry to cooperate with the Association in its special activities that are in assistance and in amplification of the efforts of the National Board.

Uniform Accounting and Cost Procedure

Whereas, fair and reasonable profits are essential for continued operation of the Pulp and Paper Industry on a sound economic basis, and

Whereas, differences at present exist in the methods used by Pulp and Paper mills and converters in their accounting and cost procedure, whereby fair competition is jeopardized, and

Whereas, the adoption of uniform methods of cost-finding and cost-estimating would undoubtedly help materially in improving the present unsatisfactory price situation, therefore

Be It Resolved, that the American Paper and Pulp Association invite all manufacturers and converters in the industry, to cooperate closely in the work being carried on by the Association, to bring about the adoption of uniform accounting and cost methods in all branches of the industry.

Representation at Expositions

Be It Resolved, that the American Paper and Pulp Association offers its assistance as an organization in assuring proper recognition and adequate representation of the American Paper Industry at the Chicago Centennial Exposition and the Franklin Memorial Exposition in Philadelphia, and

Be It Further Resolved, that the American Paper and Pulp Association be authorized to make such expenditures as may be necessary in the judgment of the Executive Committee to organize the industry for the purposes of these expositions.

Small Orders

Whereas, the sale and distribution of small orders, broken packages, etc. is a serious problem to the Paper Merchants of the country.

Be It Resolved, that the various divisions of the American Paper and Pulp Association and the grade Associations be urged to appoint committees to confer with the merchants to the end that some solution be reached such as establishing standard packages of suitable content as might eliminate the necessity of broken packages.

National Forest Timber Sales

Be It Resolved, that the American Paper and Pulp Association authorize a thorough study of the affects upon the industry of National Forest Timber Sales that are made contingent upon new mill construction, to the end that the timber sales of the federal government may be more closely integrated with the needs of the public and may not add to the already towering burden of excess production capacity in the American paper industry and to that of other countries which have been encouraged to construct mills to supply the paper needs of the United States; and

Be It Further Resolved, that the American Paper and Pulp Association urges the Federal Government to postpone liquidation of timber until a time when it is actually needed to meet the timber and timber product demand of the public, in order that more necessary liquidation of accumulated investments in timber on the part of private owners may not force continued wasteful cutting of timber and needless crowding of markets.

Extra Session of Congress

Be It Resolved, that the American Paper and Pulp Association through its officers and through its members oppose an extra session of Congress at this time, because it would tend to contribute to the uncertainty of business activities, because it is deemed unnecessary, and because it constitutes an unnecessary expenditure of public funds.

In Memoriam

Be It Resolved, that the Association expresses its sorrow over the loss of those friends and companions who were called by death during the year, and formally note its appreciation of their influence upon the development and welfare of the industry, and

Be It Further Resolved, that their companies be notified of this tribute to their memories.

Frederick C. Atkins, Treasurer, Taylor Atkins Company.

H. K. Babcock, Vice-President, Fox River Paper Company.

Ward Black, Sales Manager, Hoberg Paper and Fiber Company.

John F. Boyle, President, J. F. Boyle Company.

Charles B. Brooksbank, General Manager, Cherry River Paper Company.

Herbert V. Clark, President, Malone Paper Company.

Henry H. Collins, Founder, A. M. Collins Manufacturing Company.

Joseph E. French, President, French Paper Company.

William Glatfelter, President, P. H. Glatfelter Company.

A. S. Guggenheimer, President, United Manufacturing Company.

Charles L. Hamilton, Vice-President, W. C. Hamilton & Sons.

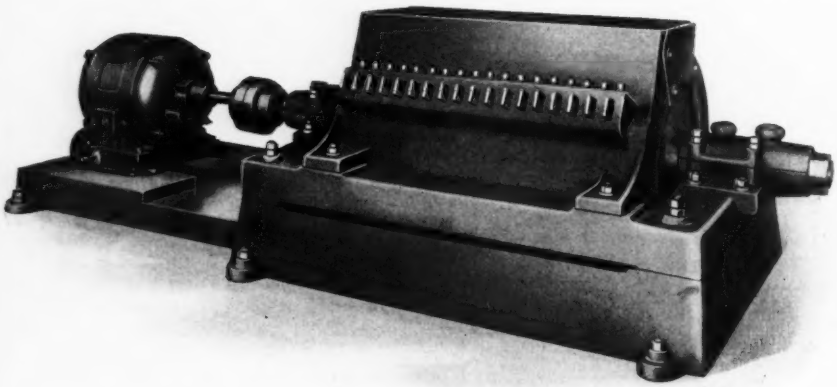
W. D. Judd, President, Carew Mfg. Co., President, Hampshire Paper Company.

George T. Keyes, President & Treasurer, Nashua River Paper Company.

Harry Price, Secretary-Treasurer, Kimberly-Clark Corporation.

A. M. Shepherd, Vice-President and General Manager, Tennessee Paper Mills.

THE WELL KNOWN LOMBARD CRUSHER
WITH DIRECT CONNECTED MOTOR DRIVE

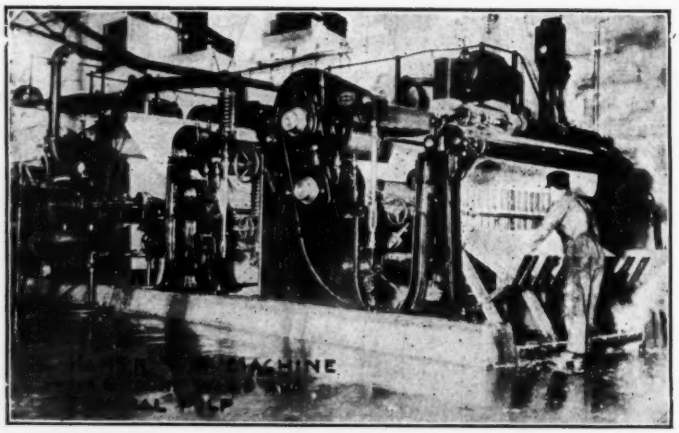


Now Standard in Many Up to Date Mills Furnished With Either Plain or Roller Bearings

PRICES AND SPECIFICATIONS SENT ON APPLICATION

WATERVILLE IRON WORKS - - - WATERVILLE, ME.

100 Tons Kraft Per Day – 58 % A. D.



With the Famous

Kamyr Wet Machine

Production . . . .

Kraft	up to 100 Tons
Sulphite	up to 80 Tons
Soda	up to 60 Tons
Groundwood	up to 50 Tons

Results . . . . . .

With 1 Press	42% A.D.
With 2 Presses	55% A.D.
With 2 Presses & Predryer	58% A.D.

Saves . . . . . .

Felt, wires, Labor, Upkeep, Power, Fibre, Floor Space

G. D. Jenssen Co.

200 5th Ave.
N. Y. C.

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Sole Agents in U. S. A.
for
PAPER MACHINERY Ltd.
MONTREAL

William G. Snow, President and Treasurer, Middlesex Products Company.

E. B. Sterling, President and General Manager, West End Paper Company.

George R. Wallace, President and Treasurer, Fitchburg Paper Company.

W. A. O. Weber, Vice-President and General Manager, Munroe Paper Company.

George A. Whiting, President, George A. Whiting Paper Company, President, Whiting-Plover Paper Company.

STANDARDIZATION OF PAPER SIZES

WHEREAS, the Standardization Committee of the American Paper and Pulp Association has conducted a nation wide survey to determine the need for the standardization of paper sample book sizes, a simplified system of filing of these demonstrations in the offices of printers, advertisers and advertising agencies, and a more economical system of distribution, and

WHEREAS, it has been determined that the industry can save a large sum of money by developing plans to meet this need.

BE IT RESOLVED, that the President of the American Paper and Pulp Association appoint a committee to study the results of the aforesaid survey and present to the Association a definite plan which will establish definite standard sizes for sample books, a simplified method of filing in the offices of printers, advertisers and advertising agencies and a distribution plan which will hereafter prevent excessive duplication with its tremendous cost of printing, mailing and postage.

BE IT FURTHER RESOLVED, that a committee be appointed to cooperate with the representatives of the National Paper Trade Association if that Association appoints a committee to develop the plans outlined in this report.

GOVERNMENT LETTER HEADS

WHEREAS, the Government Printing Office has for some years used a non-standard letterhead size 8 x 10½ in place of the standard size 8½ x 11, and

WHEREAS, this size cuts without waste from a non-standard size of bond paper 21 x 32 in place of the standard size 22 x 34, and

WHEREAS, this is causing great confusion in business and dissatisfaction on the part of small buyers and necessitates non-standard sizes of envelopes, carbon papers, file folders and special making orders of paper which do not conform to the standards adopted by the paper industry and the Department of Commerce of the United States of America, therefore—

BE IT RESOLVED, that the American Paper and Pulp Association in convention assembled request the joint committee on paper and printing through their chairman, Senator Moses, to change the size of all letterheads used by the United States Government from the non-standard size of 8 x 10½ to the standard 8½ x 11 size and to request that in the event that the Committee requires testimony before reaching a decision that the general manager of the American Paper and Pulp Association be instructed to organize such a hearing and call on such members to go to Washington as he may decide are necessary to present our case.

GEORGE W. KNOWLTON

BE IT RESOLVED, that cordial felicitations of the American Paper and Pulp Association, be forwarded to Mr. George W. Knowlton, Knowlton Brothers, of Watertown, New York, who is the oldest member of the Association, and a past president, together with congratulations upon the completion of 91 useful years, and with sincere regrets that he is not with us today.

ANTI-TRUST LAW AMENDMENT

BE IT RESOLVED, that the American Paper and Pulp Association endorse the two bills drafted by the Committee on Anti-Trust Legislation of the National Civic Federation that would:

1—Define the term "in restraint of trade", as used in the Sherman Anti-Trust Act as meaning "only such restraints of trade as, having due regard to the interests of producers, workers, consumers and distributors, shall be to the detriment of the public", and

2—Confer additional power upon a competent government agency so that opinions may be given by it in advance upon the legality of mergers and consolidations.

APPROVED PULP TESTING CHEMISTS

R. G. Macdonald, chairman, reported that the Joint Committee of the American Paper and Pulp Association, Technical Association of the Pulp & Paper Industry and the Association of American Wood Pulp Importers dealing with the recognition of pulp testing chemists has had an active year.

Of outstanding consequence was the publication on January 15, 1930 of the Official Rules for Weighing, Sampling and Testing of Wood Pulp for Moisture. Owing to criticisms received during the past few years relative to the clarity of the official rules a representative committee of mill and commercial testing chemists met in New York with the Joint Committee and studied each rule in detail. The revised rules were submitted to the approved chemists and further refinements were made so that the Committee proceeded with the final publication early in the year.

Applications for approval of chemists have been received and after careful consideration by the committee two received recognition as Approved Pulp-Testing Chemist.

The committee lost a valued member by death during the year, Sigge Goldman, the representative of the Association of American Woodpulp Importers. Mr. Goldman was chairman of the committee for many years. He has been replaced by Mr. Frank C. Overton of Castle & Overton, Inc.

PHILADELPHIA QUARTZ 100 YEARS OLD

The 100th Anniversary of the Philadelphia Quartz Company was celebrated by a dinner on January 26, 1931, at one of the leading hotels in Philadelphia. About 200 people were present, including the personnel of the various departments at the general offices, out of town sales representatives and a group from the factories. The oldest person present was John McNamee, who became associated with the company 60 years ago.

William T. Elkinton, chairman of the board of directors, and grandson of the founder, Joseph Elkinton, reviewed sketchedly the historical background of the company. An interesting tableau contrasted the business office of Joseph Elkinton in 1831 with the activity of the 1931 office. A series of slides and motion pictures portrayed the growth of the business and the present personnel.

Each individual associated with the company was the recipient of a Telechron clock, token of good will and appreciation from the executive staff.

NATIONAL KRAFT ASSOCIATION

The National Kraft Paper Manufacturers Association held a number of important meetings during the Convention. The following officers were elected: President, Aytch P. Woodson, Mosinee Paper Mills Company.

Vice-President, J. E. Alexander, Nekoosa-Edwards Paper Company.

Secretary-Treasurer, Major O. M. Porter.

Executive Committee: Aytch P. Woodson, J. E. Alexander and P. P. Schnorbach, Filer Tire Company, Filer City, Mich.

It was decided to transfer the headquarters of the association from New York to Chicago.

TAYLOR PAPER CO. INC.

In the January 8, 1931 issue of the PAPER TRADE JOURNAL it was stated that Frank E. Taylor and Kenneth R. Gregory headed the new organization of Taylor Paper Company, Inc. This is incorrect. J. Prior Taylor and W. Fletcher Prull are the stockholders of the reorganized company. This concern specializes in book and magazine papers, having its main office at 300 Fourth avenue, New York. Mr. Prull has complete charge of the purchasing and selling for the company.

NEWTON FALLS PAPER CO.

QUALITY PAPERS

SUPERIOR
S. & S. C. BOOK

N. F. SPECIAL
TILING AND HANGING

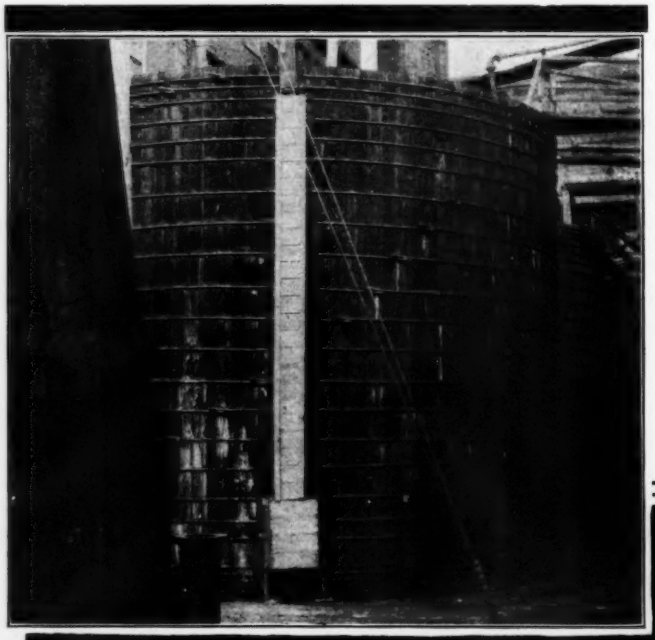
N. F. EXTRA STRONG
RAW STOCK FOR COATING

Mill and Offices
Newton Falls, N. Y.

New York Office
10th Ave. at 36th St.

WOOD TANKS ARE IDEAL

FOR ACID STORAGE, ALUM SOLUTION, etc.



NON-CORRODIBLE — Wood Tanks are used where Steel Tanks cannot be used, and usually are preferred because of their high efficiency, where either would do. However, we can furnish steel tanks as well as wood tanks—either plain or lined with lead, rubber, etc.

Made in designs for every purpose in the paper mill.

The Hauser — Stander Tank Company
Cincinnati, Ohio

An Old Timer's Reminiscences

By Joseph H. Wallace, Pres., Joseph H. Wallace & Co.

(Continued from last week)

Schiller caused me a lot of trouble when he wrote the Thirty Years' War. I had to read it in German and write it in English, while at Worcester Polytechnic Institute. I remember a group of warriors who got together for free translations and *they were free*. We all passed final examinations in German and thought we were good. When I went to Germany no one understood me.

On January 1, 1901, began a thirty years' war against the common enemies—*Hunger* and *Thirst*—and it is still on. Myself and no others launched into business, with no jobs and a disagreement over what was due from Tower & Wallace tied up our funds.

Capital to Start Wallace & Co.

The work of the Sheppards of Ontario, pointed to a development on the Spanish River between Sudbury and Sault Sainte Marie, Ontario. We had had some conferences and had been to the site—so had an inside track and just at the needful moment Tom Sheppard blew into New York City, looking for me. Having been laying out an ideal (?) ground wood mill, the job was mine; and, with it, some advance payments that gave us capital with which to start Wallace & Co.

Meantime I had become acquainted with: Dr. Viggo Drewsen, the eminent chemist; the Bertuchs—Frederic and Albert, his father; Jake Andersen, and Morris Gintzler who worked for Bertuch & Co. Mr. Bertuch agreed to back us with needed funds for an interest in our profits, and we were off.

Rival Paul Bunyan

W. J. Sheppard of Waubaushene; Tom Sheppard of Ovillia; Big Bill Irwin of Peterboro; John R. Barber of Georgetown; George R. Gray of the woods, and Jim Playfair of the lakes were the boys that decided to proceed from the lumber business to the pulp and paper business. I have never had finer men to work for or to depend on in a serious situation. Two of these lumbermen, Irwin and Gray, were giants who didn't know their strength. Tales of their handling the lumberjacks rival Paul Bunyan. I must tell one.

Gray was in charge of a camp on the upper Spanish at a time when a big lumber jack, the terror of the country, took a new suit of clothes from the company's store and left camp. Gray following his tracks all day, came up with him late in the afternoon, took the clothes off of him and returned to camp that night while the big lumberjack went after him in his underwear. How about that, George?—Or do you deny the stories, now that you are rich? At any rate, you can't deny that you were the record holder in the shotput for the New York Athletic Club, can you?

Some Schemes at Soo-Ontario

Soon after getting the Spanish River job, we were hired by F. H. Clerque for some schemes at Soo-Ontario. It was a pleasure to meet Clerque, whose geratest difficulty lay in the fact that he saw the Soo possibilities twenty-five years before others could see them. Gilmour and Heuson had us make a report on the power of the Gatineau near Ottawa—now a big I. P. development. E. Mackay Edgar, (now Sir Mackay), became a client and valued friend. In examination and report on a power and mill for Edgar, we declared the dam unsafe. They ridiculed the idea, stating "it has been there several high waters." But they didn't take the loan! The dam went out the next spring, so Edgar always thought I was good—at least, I was *lucky*.

Had occasion to examine a water power possibility at Kagawong Lake in Manitoulin Island in Georgian Bay, Lake Huron, and saw the most small mouth black bass ever seen in one place—and the hungriest. A spoon landing on the water was a strike. Caught one hundred pounds in three hours and quit because my arms were tired. I told that to Bill Ross, the investment banker, one day, and he through I was a beautiful fish liar—but he and brother Charlie went there on their next August fishing party, and now they can outlie me two to one.

J. E. Henry gave me a job to build him a mill at Lincoln, N. H. With reports to make on various projects that were becoming heard of in the Middle West and Canada, we were busy and prosperous.

Dean of Paper Mill Engineers

When Ashley B. Tower died, Mrs. Tower sold the business to George Hardy, who still carries on as the dean of paper mill engineers. Ferguson was building the world's largest paper mills at Millinocket, Maine, for Garrett Schenck. The paper trade dinners were becoming *some* parties. The heavenly twins, Stuart Lansing and Archy Jones continued to look alike and to act alike by getting some big business in paper machines and beaters respectively. Lazzeri's Italian Restaurant at Rosebank, Staten Island, was introduced to me, for which I thank Dr. Drewsen's memory. Jake Andersen began getting a reputation. Shawnigan Falls saw the Belgo-Canadian project. And John C. Morgan, former head of the Niagara Falls Paper Company, brought to my office the biggest project yet heard of—The White Mountain Paper Company.

I might also add that Anna Held began taking Champagne baths about the same time, and Weber & Fields Theatre was the big attraction in New York night life.

White Mountain Paper Co.

The White Mountain Paper Company looked to be the best thing that a young engineer ever had handled to him, and turned out to be the worst, not only for the engineer but for all parties concerned. My first introduction to the scheme came by Mr. Morgan's offering me the largest engineering job I had ever heard of, and on per diem charges that, while satisfactory, were no greater than would be proper for such an important undertaking. I was asked to design a paper mill with twenty paper machines for news and book papers of all grades. The mill was to be on tide water and backed by the only remaining large spruce timber tract in New England, supplemented by vast areas in the Canadian Maritime Provinces—several ground wood possibilities in rivers in Maine at easy freight rates to the paper mill site—and, sponsored by names that stood for integrity and big business in New England and in New York. This big mill at Portsmouth, N. H., kept a force of engineers busy, and, there seemed no end of financial backing. My work was limited to designing and supervising construction. Lee Parks and Jim Mullen were engaged to make news and book papers respectively—and both were recognized as real paper makers.

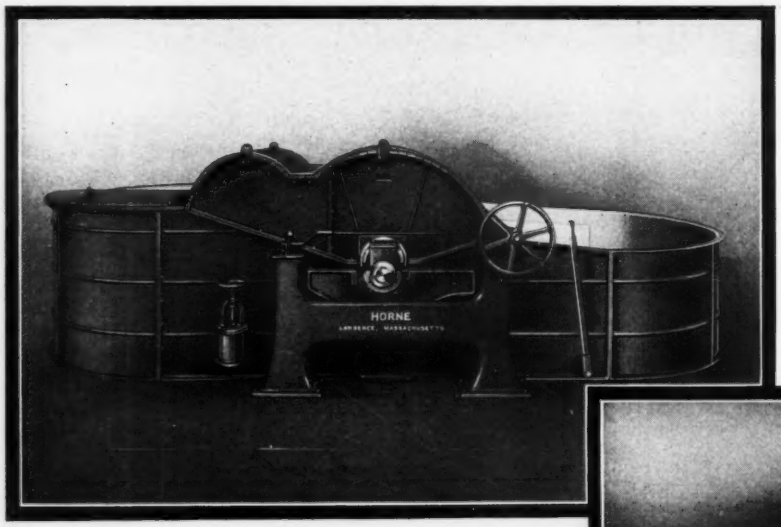
"Just Too Bad"

This project was "just too bad" for all parties concerned, and, late in 1902, work on the mills was abandoned. During this same period, Wallace & Co. were fortunate in having for clients as well as friends the following well known characters in the paper trade:—

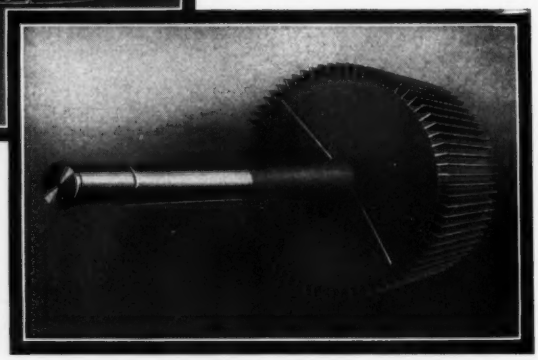
John A. Dix—Ex-Governor of New York State, for whose interests we designed the Iroquois Pulp and Paper at Thomson, N. Y.

James Rogers, of the J. and J. Rogers Company, Ausable Forks, N. Y., for whom we designed a two machine mill.

Fred M. Hodge, Kalamazoo Paper Company, Kalamazoo, Mich., for which organization we designed a two machine book paper



Horne
High density
Fast circulation
Self dumping
Low H. P. per ton



Are your beaters obsolete?

Horne's beaters for all grades of stock are modern in every detail of engineering and construction.

J. H. Horne & Sons Co., Lawrence, Mass., U. S. A.

THE WIENER PULP REFINER feeds through the large end RAW STOCK IS REFINED in the MOST NATURAL WAY. ✓

It is HYDRATED MORE THOROUGHLY AND PRODUCED MORE QUICKLY. ✓

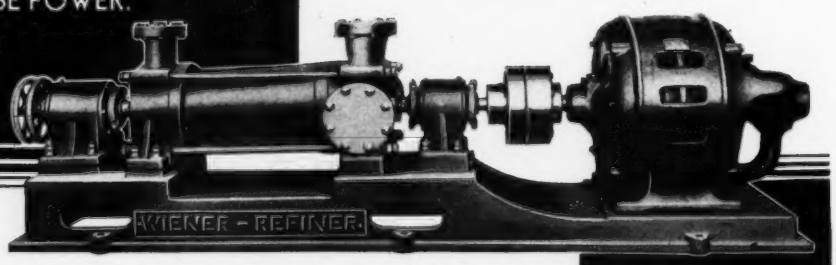
The need of FILLING and CHIPPING IS ELIMINATED. ✓

A BETTER FINISHED STOCK IS OBTAINED with LESS HORSE POWER. ✓

ALSO MANY OTHER FEATURES.

Check these features of

THE WIENER PULP REFINER



THE WIENER PULP REFINER
JOHN A. WIENER
81 WEST SEVENTH ST., OSWEGO, N. Y.

WRITE FOR COMPLETE INFORMATION

plant, which afterward brought us much other business. Fred says, "It is some mill yet!"

Herbert H. Everard, Kalamazoo, Mich., who brought to us the mill at Munising, Mich., which is still a real paper mill.

J. Howard Friend, West Carrollton, Ohio, for whom we designed a mill at that location.

Francis H. Clerque, Sault Sainte Marie, Ontario, for whom we designed a paper plant.

Governor Dix a Real Man

John A. Dix, one time Governor of New York State, was a real man. His friendship was a source of keen pleasure to me, and lasted until his death about three years ago.

About this time, Dean & Shibley, Bankers, began negotiating with board mills with a view of putting together a big combination. We had the pleasure of serving with A. N. Burbank, Treasurer of the International Paper Company, and Frank W. Trowbridge, president of the Black-Clawson Company, of Hamilton, Ohio, as a board of appraisers, and, as a result of the work of this board, the United Board and Paper Company was formed. My fellow apparisers were certainly a capable pair to work with.

Cornstalk and Bagasse in 1902

In July, 1902, we began looking into the possibilities of cornstalks and bagasse as paper making material. George Sherwood had a plant at Kankakee, Ill., to shred the cornstalks and separate pith from shell. Drewsen believed it could be separated better chemically—and so it proved. Laboratory investigations were followed by a real mill scale demonstration at Cumberland Mills, Maine, on the small machine of S. D. Warren & Co. Joseph Warren and Dr. Viggo Drewson worked out these tests and made some remarkable book papers and some that resembled coated papers in a manner that appeared to present no paper making difficulties. We have samples made at that time, that we will gladly show to interested parties, and we still believe that bagasse, (sugar cane refuse), will be used as material for fine book and magazine paper. At the St. Louis World's Fair in 1904, papers made from Louisiana bagasse were exhibited by Wallace & Co., and we have a gold medal, (made of bronze because of lack of funds), to prove it.

Colonel J. A. Ockerson of St. Louis came to use to design an exhibition paper mill for the fair but the same old lack of funds prevented it, although our many machinery friends volunteered to furnish practically all the principal machinery.

Among other more or less regular jobs was an occasional preliminary report on a news print mill made for certain newspaper owners about the time they were making their annual contracts for news print paper.

Arthur Millington Can Corroborate

While Arthur Millington and the writer were laying out some new developments at Spanish River one afternoon, we saw a big fish that had become landlocked by logs that had floated down the stream and grounded. He or *she* was in a pond about fifty feet by thirty feet and about three feet deep in the center portion. Cutting some heavy canes, we went after the fish—into the pool—were knocked down several times—finally landing the fish with our clubs, after a hard fight.. It was a sturgeon, measuring over five feet in length, and the worst of the story was that Bill Irwin made the boarders at camp eat it. If Arthur Millington reads this, he will recall that fish, and corroborate the tale. Arthur was general manager of Spanish River Pulp and Paper Company at the time, and we had had many experiences together that I may tell of later in this harangue; so, if there is anything you don't want told, Arthur, this is the first warning.

(To be continued)

SITKA SPRUCE PULP CO. BUSY

The Sitka Spruce Pulp and Paper Company, Empire, Ore., shipped 500 tons of pulp to Atlantic coast ports this month and is now employing 400 men.

COMPLAIN OF PULPWOOD RATES

At the annual convention of the Canadian Pulpwood Association, held in Montreal, representatives from Fort Michigan to Halifax, were unanimous in the opinion that Canadian railroads' high freight rates were throttling their business, and that, unless these rates were immediately and substantially reduced, not only would the pulpwood business be lost to the country, but the railroads, themselves, would suffer by reduced earnings to the extent of several million dollars.

Examples of the tremendous burden pulpwood shippers are forced to carry under present rates may be judged from the following reports of members: (1) Out of the gross returns received by one of the largest shippers in the Association for wood delivered to a United States mill, 65% is paid to the railroads in freight; (2) To one of the producers in the Cochrane district the value of a carload of wood at shipping point is about $112—the freight to the United States border, alone, is $150.

It is held by the members that freight rates on pulpwood are altogether out of line with freight rates on other low cost raw materials. Commodity values generally have dropped tremendously in the past few years, labor has had to come down and freight rates must be correspondingly reduced if Canada is to continue to hold her export trade in this commodity.

Officers elected for the year at the convention were as follows:

President—Walter H. Russell, Port Arthur; vice-presidents—Armand G. Auger, Quebec; Ralph P. Bell, Halifax; Major T. A. MacLean, Greening, Que.; Jas. Thompson, Toronto; executive officers—J. O. Auger, Quebec; E. A. Bell, Fort William; C. E. D'Auteuil, Quebec; Joseph Grogan, Quebec; George S. Kerr, Campbellton, N.B.; J. O. Amyot, Quebec; T. P. Altimas, Montreal, F. W. Perras, M. P., Gracefield, Que.; W. Roy Smith, Annapolis Royal, N. S.; Gordon W. Jones, Bancroft, Ont.; A. E. Wicks, Cochrane, Ont.

NEWS PRINT LABORATORY FOR GEORGIA

Before filling an invitation to address the general assembly of Georgia, Dr. Charles Herty, New York scientist, announced a Georgia woman has offered $50,000 for an experimental news print manufacturing plant provided other sources furnish operating costs. The woman's name was not disclosed.

He estimated $20,000 a year for five years would be required for operating expenses.

Dr. Herty also announced a plant site virtually had been donated by an unnamed city in the timber district.

He said he was confident that if the plant is established it will be demonstrated in not more than five years that making news print from pine is entirely feasible. Thus, he said, a new industry of enormous proportions soon would arise in Georgia.

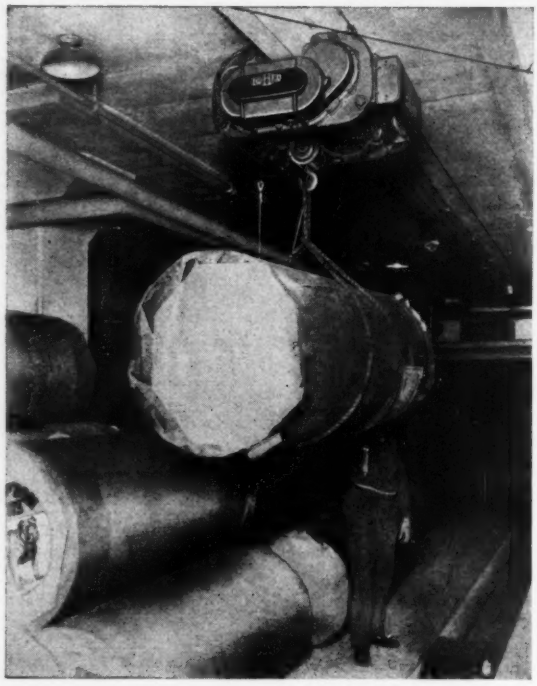
With the establishment of paper mills in the south 125,000,000 acres of cut-over and abandoned farm land now lying idle can be made to grow two cords of wood per acre annually, producing not less than $5 a cord, Dr. Herty said.

BRYANT PAPER CO. ADDS DIRECTORS

Three directors were added to the board of the Bryant Paper Company at the annual meeting, held Saturday afternoon, in the administration building. They are E. C. Woodruff, New York, who is in charge of the company's New York sales office; Albert D. Hoffman, of the Detroit and Securities Trust Company and W. E. Kidder, president of the Kalamazoo Sled Company.

Other directors named are: Frank E. McAllister, W. J. Lawrence, W. B. Milham, Felix Pagenstecher, J. E. Brown, F. M. Stephens, Vernon T. Barker, Charles Clarage, Glenn S. Allen and C. Allen Fox, all of Kalamazoo; E. L. Brooks, Cincinnati and Dr. S. Rudolph Gilkey, of Plainwell.

Officers named include Felix Pagenstecher, president; F. M. Stephens, vice president and sales manager; E. C. Woodruff, vice president; W. B. Milham, vice president; C. Allen Fox, secretary-treasurer.



Mighty close quarters—but LO-HED will do it!

Just the few extra inches of lift that you get with a LO-HED makes the difference between piling rolls two high, or three. For a LO-HED utilizes every available inch of headroom.

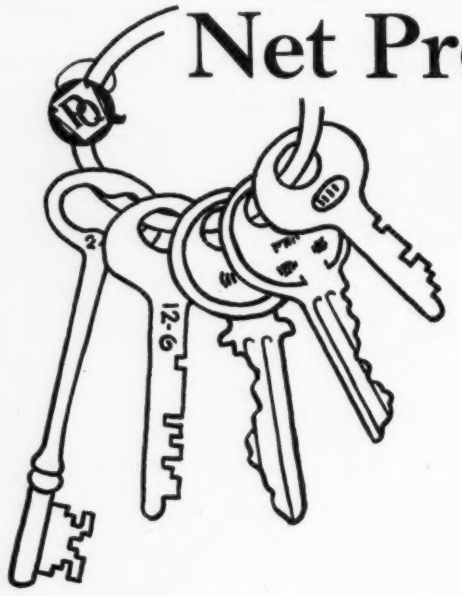
Notice in the picture how the block has been drawn up into the body of the hoist. This patented feature makes it possible for the LO-HED to pile goods clear to the ceiling.

The ability of the LO-HED to operate in the absolute minimum headroom is but one of the features of this versatile hoist. Its work includes all the heavy lifting and handling there is to do. It is strong, fast, easy to operate and stands up under the hardest service. Whatever the handling job, a LO-HED will do it better, quicker and cheaper.

Send for information on how LO-HED Hoists will reduce your handling costs.

AMERICAN ENGINEERING CO.
2401 Aramingo Ave., Philadelphia, Pa.

Five Keys to Net Profit



- **"A-Syrup" Silicate in the beaters.**
- **"N" Brand Silicate for thinning clays.**
- **"U" Brand Silicate for acid proof cements.**
- **Seal Brand Silicate for capping rolls and splicing.**
- **Concrete Special Silicate for hardening concrete.**

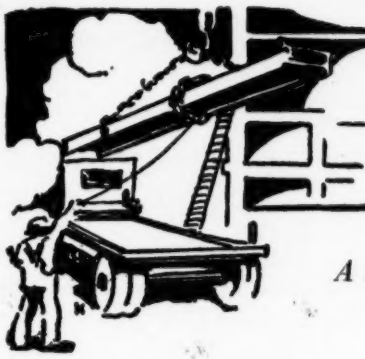
Evidence has been collected regarding the values of silicate of soda in the manufacture of various kinds of paper. It is tabulated in a 12 page booklet. Send for a copy without obligation.

PHILADELPHIA QUARTZ COMPANY

1831
BEGINNING ANOTHER CENTURY
1931

General Offices and Laboratory
121 South Third Street
PHILADELPHIA

Chicago Sales Office
205 W. Wacker Drive



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Manistique, Mich.—The Manistique Pulp and Paper Company is considering extensions and improvements in power plant for mill service, including installation of a new high pressure boiler plant, high pressure turbo-generator unit and accessory equipment, reported to cost over $85,000. It is understood that the company will carry out an electrification program in portion of mill, in connection with power expansion program, including grinders and other equipment. Edward Sheahan is general manager.

Tacoma, Wash.—The Riverside Paper Company, Tacoma, has purchased the machinery and equipment in the mill of the Union Paper Company, Monongahela, Pa., now defunct, and dismantling will be carried out at once, with view to early shipment to Tacoma, where it will be utilized in a local mill. The Union mill was closed down about five years, after operating for a period of 40 years. The property has been owned by Alexander & Co. for the past four years.

New York, N. Y.—Travin & Sons, Inc., recently organized by Harold E. Travin, 186 Joralemon street, Brooklyn, and associates, with capital of $20,000, is said to be planning early operation of a local plant for the manufacture of paper boxes and containers. Herman B. Mass, address noted, is one of the incorporators.

Kalamazoo, Mich.—The Watervliet Paper Company, Kalamazoo, is carrying out an expansion program in the coating department at its mill, and will install a new arch back type coating machine and auxiliary equipment, estimated to cost about 500,000.

Burlington, N. C.—The Old Dominion Paper Company, Richmond, Va., has concluded arrangements for the purchase of the mill of the Keystone Finishing Mills, Hawkins street, Burlington, heretofore used for textile finishing service, and will occupy for a new branch mill unit. Purchasing company is said to be arranging for alterations and improvements in the building, which has just been vacated by the Keystone company, which has removed its plant at Asheboro, N. C. Equipment will be installed by the Old Dominion company at an early date.

New York, N. Y.—The Unique Trawin Corporation, New York, has leased the second floor in the building at 131 Bleecker street, and will establish a new plant for the manufacture of paper boxes and containers at that location.

Lambertville, N. J.—The Mann Paper and Pulp Company, recently organized by Philadelphia, Pa., interests, headed by Walter Cochran, has taken over the former local mill of the William Mann Paper Company, South Main Street, which has been closed for some time past. The new company will make a number of improvements in the plant and equipment, including installation of certain new equipment, and proposes to have the plant ready for operation at an early date. Facilities will be provided for the employment of about 75 operatives. The new organization is also liquidating a number of claims against the former owners, including city taxes to the amount of about $10,000. Mr. Cochran will be president of the new company.

Kingsport, Tenn.—The new addition to be erected to the local cellulose mill of the Tennessee-Eastman Corporation, announced in these columns last week, will consist of a one and part four-story structure, 100 x 300 feet, estimated to cost close to $900,000, with machinery, instead of a smaller sum, previously noted. Superstructure will be placed in progress at an early date, to be of reinforced-concrete, brick and steel type. Company engineering department will be in charge, in cooperation with similar division of the Eastman Kodak Company, Kodak Park, Rochester, N. Y., of which Tennessee-Eastman organization is a subsidiary. A list of machinery to be installed is being arranged.

Niagara Falls, N. Y.—The Burkhardt Paper Company has been organized under State laws with a capital of $50,000, to take over and succeed to the company of same name, with local mill at 25 Adams street, specializing in the production of insulating paper, chipboard, packing papers and kindred stocks. It is understood that the new organization will carry out a general expansion program. The principal incorporators are Curt H. Burkhardt and Peter M. Wilson.

Grand Rapids, Mich.—A. W. Jack, Grand Rapids, is at the head of a project to establish and operate a local paper mill, primarily for the production of asbestos paper and board specialties. It is understood that a building will be taken over at an early date. A portion of the machinery and equipment will be secured from the Lincoln Paper Mills, Elkhart, Ind., now in financial difficulty and idle. It is proposed to organize a company, headed by Mr. Jack, to carry out the project.

Harrisburg, Pa.—The Harrisburg Paper Box Company, 1550 Vernon street, is running at close to normal production basis and devoting a portion of output to a new type of paper box to comply with the State food laws, which require that all foodstuffs be covered when on display. The new container is arranged with top and side windows of cellophane to answer this requirement, and is being produced in square and rectangular shapes.

New York, N. Y.—The Custom Paper Box Company, New York, has arranged for a lease of floor in the building at 222-24 Greene street, and will occupy for a new plant for the manufacture of paper boxes and containers of various kinds. It is expected to begin operations at an early date.

Bangor, Me.—The Eastern Manufacturing Company, Bangor, with branch mill at Lincoln, Me., has arranged with the Bangor Hydroelectric Company for the sale of its power stations on the Stillwater branch of the Penobscot River, heretofore used for paper mill service. The power company will take over the property at once and will connect the transmission system with its lines; the output will be used also by the Central Maine Power Company, in connection with its recently completed system from Veazie to Bucksport, Me., where the paper mill of the Maine Seaboard Paper Company, an affiliated interest, is now in operation. It is understood that service will be furnished to the Eastern mills by the power company as required in the future.

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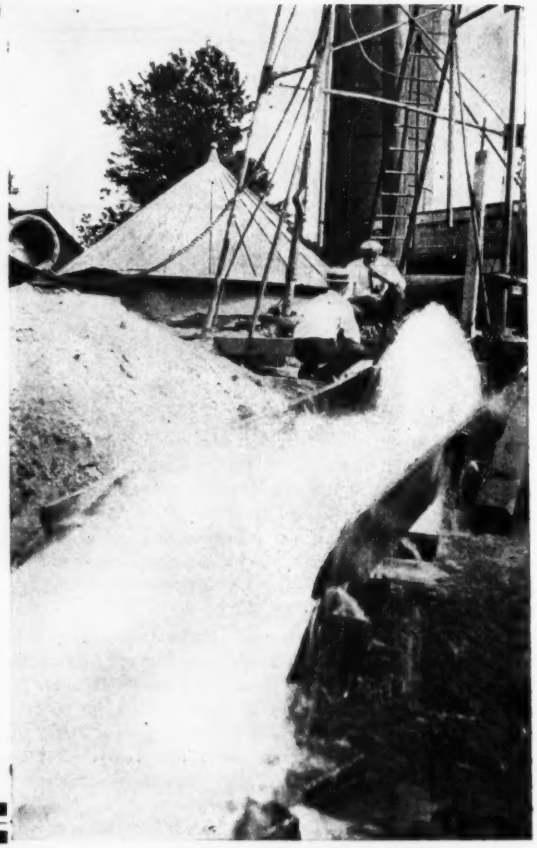

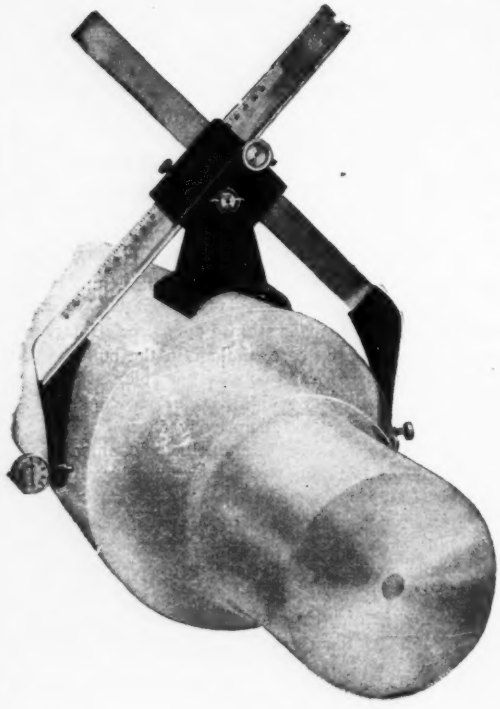

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REDUCING POWER COSTS THROUGH UNIT TREATMENT

Conducted by Reginald Trautschold Consulting Engineer

Cranes, Hoists, Tractors and Trucks*

II—Cutting Materials Handling Costs

Cranes, hoists, tractors and trucks are simply tools for use in cutting materials handling costs. When and where they should be employed depends largely upon local conditions and plant layouts, governing factors which are not always susceptible of much modification. True, the simplification of the handling tasks and the elimination of avoidable handling operations are ordinarily to be desired and the use of conveyors and elevators where feasible, but it is upon the proper use of these aforementioned tools that the refinements in handling costs reductions are usually dependent. Why these tools should be employed and for what functions they have demonstrated merit are considerations, consequently, with which every mill should be concerned.

Expeditious and economical handling of materials to, in and from the mill is today one of the chief considerations in profitable plant operation. It is one, moreover, which affords opportunities of effecting still further desirable economies in virtually every mill, for methods and systems differ in nearly every establishment and it is very questionable whether the best solution to the complex problem has been consummated as yet in any mill. Some of the installed systems are very much better than others, of course,

* For previous discussions on cranes, hoists, trucks, etc., see PAPER TRADE JOURNAL, Feb. 20, 1930 and Feb. 5, 1931.

Courtesy: Industrial Brownhoist Corp.

FIG. 1

Steam locomotive crane handling coal supply for power plant.

Courtesy: Industrial Brownhoist Corp.

FIG. 2

25-ton steam locomotive crane with grapple unloading pulp logs.

and excellent judgment would seem to have been shown in the choice of the tools employed in many cases, but so many factors have to be taken into consideration, the influence of which upon production costs may even be continually varying, that there

Courtesy: Industrial Brownhoist Corp.

FIG. 3

20-ton steam locomotive crane greatly increased yard storage and reduced cost of handling pulp logs at the plant of the Great Western Paper Co., at Ladysmith, Wis.

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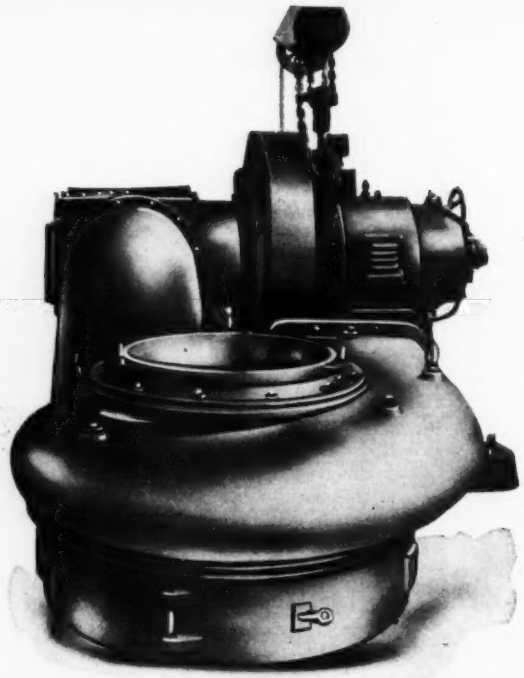
DIGESTER FILLING SYSTEM

ADVANTAGES

Increased compactness of the charge;

Consequent increase of the production by at least 20%.



SAVINGS

Lowering of production costs:

Saving in liquor and sulphur.

Saving in steam.

Greater concentration of waste liquors whereby additional steam is saved when condensing.

Means

INCREASED COMPACTNESS OF THE CHARGE

LOWERING OF PRODUCTION COSTS

This FRESK DIGESTER FILLING SYSTEM is an improved method in pulp manufacture whereby there is a marked increase in production and great saving in cost.

FRESK Digester filling insures as compact a charge as possible by acting on the single chips in such a manner that they lie flat and even as they fall into the digester. It does not depend on any cooking method nor interfere with stewing the charge subsequently. The increased compactness results in increased production and in improved quality of product. The cost of installation of FRESK DIGESTER FILLING SYSTEM is low in comparison to advantages gained through lowering of costs and increased sales from improvement in quality. Send for catalog with complete information.

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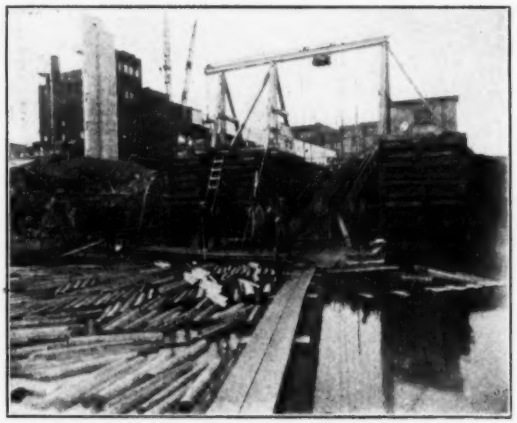


Courtesy: American Engineering Co.

FIG. 4

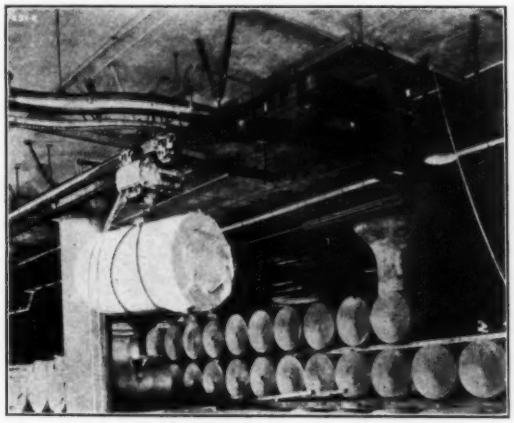
Suspension hoist at the Maine Seaboard Co.'s log pond at Bucksport, Me., raises and lowers the boom of the log conveyor as tides rise and fall.

are comparatively few instances where a mill can afford to rest content with its existing methods of materials handling.

Some of the largest cuts in materials handling costs have been effected by simply re-routing materials, by simple modifications in plant layout and even by the employment of manually operated equipment, in some cases, to the exclusion of power equipment. Methods and tools giving excellent satisfaction in one mill may even prove wasteful when employed in another mill, not through weaknesses in the method or tools but rather because of the influence of local conditions incorrectly appraised.

While these local conditions largely dictate the selection of the various materials handling tools for specific services, the properties and characteristics of the tools may occasionally be such as to make advisable certain radical modifications of these local conditions, modifications which are at times quite feasible.

It is for this reason that the materials handling problem is approached in a different manner at almost every mill, for proper materials handling tools selection necessitates familiarity, not



Courtesy: American Engineering Co.

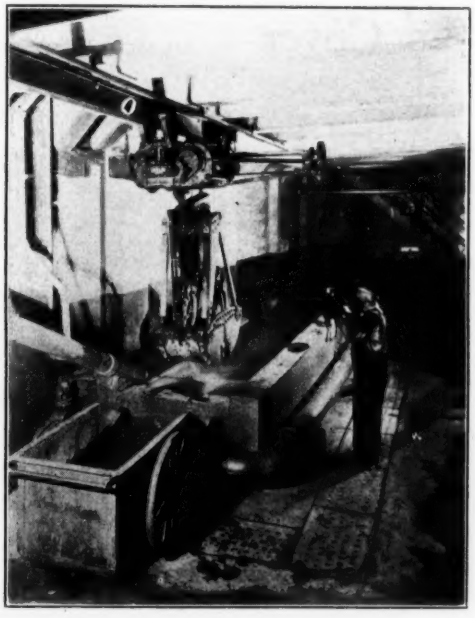
FIG. 6

Overhead transportation at the Hygrade Corrugated Paper Co.'s plant at Long Island City, N. Y.

only with the tools available, but with their service records under all kinds of conditions. Knowledge of this character can be acquired only empirically by the individual mill or by correctly appraising the merit of systems in use in other mills.

Few mills are willing or able, for that matter, to experiment with many materials handling systems and, as a result, must be governed to a considerable extent in their selection of materials handling tools by the experiences of other mills. The satisfactory materials handling system of any mill serves, consequently, as an example and is well deserving of consideration by every other mill striving for low materials handling costs. The system in its entirety can rarely be adopted by another mill, it is true, but some particular operation in any well planned system of materials handling will frequently prove instructive and indicative of refinements in equipment details and practices which can be adapted or developed to advantage.

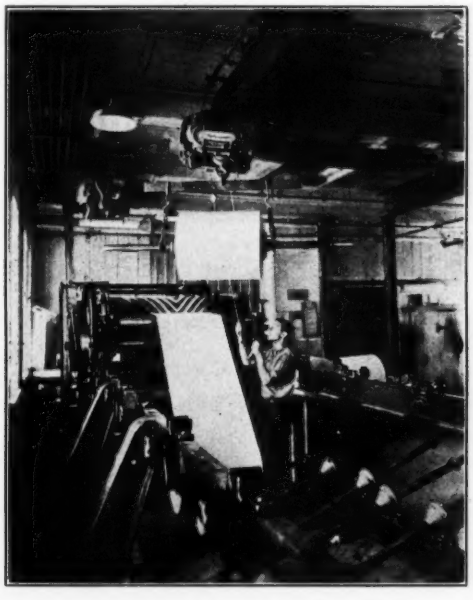
As no mill can undertake such a time consuming task as to examine all the materials handling systems in operation in other



Courtesy: American Engineering Co.

FIG. 5

Handling fly-ash at the Champion Coated Paper Co.'s plant at Hamilton, Ohio.



Courtesy: American Engineering Co.

FIG. 7

Trolley hoist lifts rolls of paper into unwinding frames at the L. L. Brown Paper Co. plant, Adams, Mass.

St. Regis Paper Company

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Courtesy: American Engineering Co.

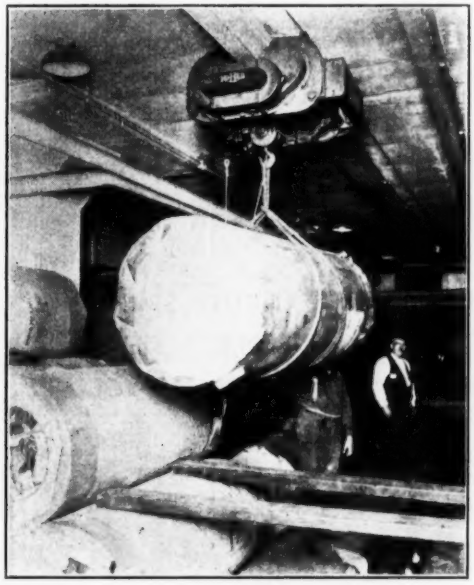
FIG. 8

Brown & Bigelow, St. Paul, Minn., handle heavy rolls of paper easily with a suspension hoist mounted on a monorail trolley.

mills, or even those which may exemplify some refinement of interest, a series of selected views depicting noteworthy applications of materials handling tools is, to the experienced mill, the next best way of acquiring familiarity with satisfactory materials handling methods, tools and equipment. Such pictorial depictions are frequently highly instructive, serving as exhibits of operations and practices incorporating refinements of demonstrated merit.

Locomotive Type Cranes

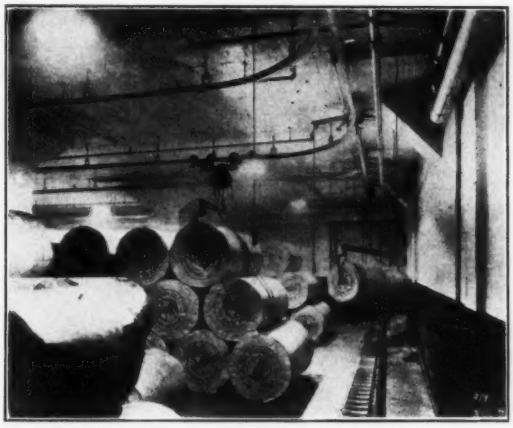
Where conveyors and elevators can be used to advantage, as is quite generally the case in handling the inflow of raw materials consumed by the mill and power plant, the use of the materials handling tools in question is limited, so far as possible, to transfer operations, unloading of shipments received by rail and boat and to place these materials in temporary storage. Examples are familiar to all and it is hardly necessary to elaborate on this phase of the question. An illustration or two will suffice, in fact, such as the use of locomotive cranes for unloading the coal consignments for power house use, for handling pulp logs



Courtesy: American Engineering Co.

FIG. 9

Rapid overhead handling in confined quarters is practiced at New York Herald Tribune storeroom.



Courtesy: The American Monorail Co.

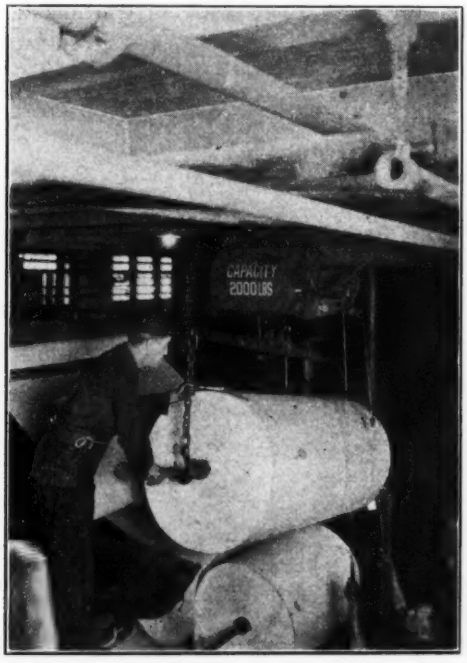
FIG. 11

Paper storage room of the "Every Evening," Wilmington, Del., is served by overhead trolley hoist employing a special grab which speeds up roll handling.

in their transfer from barge to wood pile and from pile to mill, etc.

The use of locomotive type cranes with buckets, shovels and grapples in such services is particularly pertinent, because these materials handling tools may also prove useful in other tasks about the mill, in construction work and in heavy handling operations of all kinds. Their mobility is also a valuable asset and not infrequently justifies their use for routine tasks which could be performed just as expeditiously and perhaps at lower unit cost by less expensive equipment lacking the ability of moving from place to place; a simple mast and gaff rig, for instance, or a hoisting tower in fixed position. Often, however, the mobility of the tool is a factor directly instrumental in cutting materials handling costs.

A case in point is the use of these cranes at the mills of



Courtesy: American Engineering Co.

FIG. 10

1-ton trolley hoist lifts rolls of paper onto the presses at the Hudson Printing Co., Hoboken, N. J. pressroom.

ROLL SLITTING MACHINES

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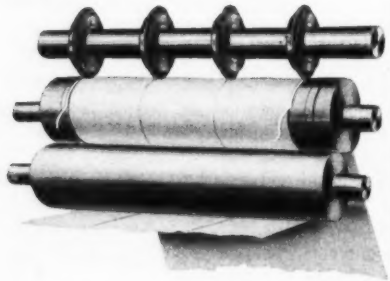
NUMEROUS MODELS
to meet the most different requirements



SLITTING and RE-REELING—MACHINES
up to 240″ of working width

ROLL—SLITTING—MACHINES
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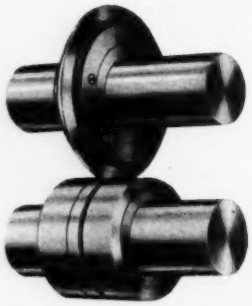

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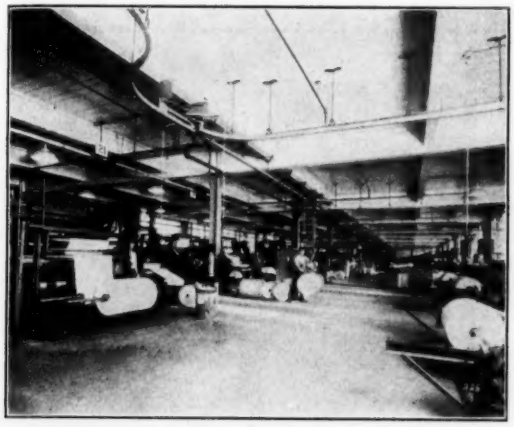


Courtesy: The American Monorail Co.

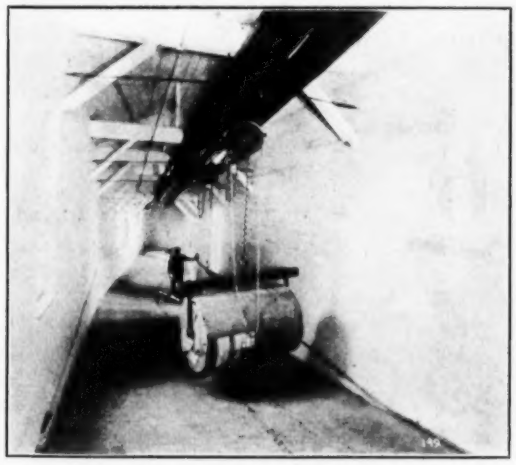
FIG. 12

Largest savings at the Gilman Fanfold Corp. plant, Niagara Falls, N. Y., have come through reduced damage to paper, elimination of labor and freedom from injury to operators caused by lifting heavy rolls of paper onto the presses.

the Great Western Paper Company at Ladysmith, Wis., where the mobility of the locomotive crane has proved quite profitable. The wood pile storage capacity of the yard has not only been greatly increased by the ability of the tool to travel around, but the handling costs have also been considerably reduced by the use of a 20-ton steam locomotive crane and log grapple. This is experience which should be of interest to other paper mills, particularly as such cranes are now procurable operating on steam, gas, electric or Diesel engine power.

Hoists as transfer agents and as conveying mechanisms have also proved to be valuable materials handling tools in many mills where handling requirements are quite distinctive, though not necessarily uncommon. The reclamation of pulp logs from the tidal pond of the Maine Seaboard Paper Company on the Penobscot at Bucksport, Me., for example, well exemplifies the dominance of local conditions upon the selection of an economical materials handling system. The tidal rise of the log pond is considerable and a suspension hoist, to raise and lower the boom of the conveyor which draws the logs from the river to the mill, adds desirable flexibility to the reclaiming operation and effects quite a reduction in handling costs.

At the Hamilton, O., mills of the Champion Paper Company, the fly ash from the base of the power house stack is washed into a concrete tank and a manually operated hoist equipped with a



Courtesy: The American Monorail Co.

FIG. 14

Conveying 3,000 pound load from a lower to a higher level with a twin-hook hoist at the plant of Brown & Bigelow, St. Paul, Minn.

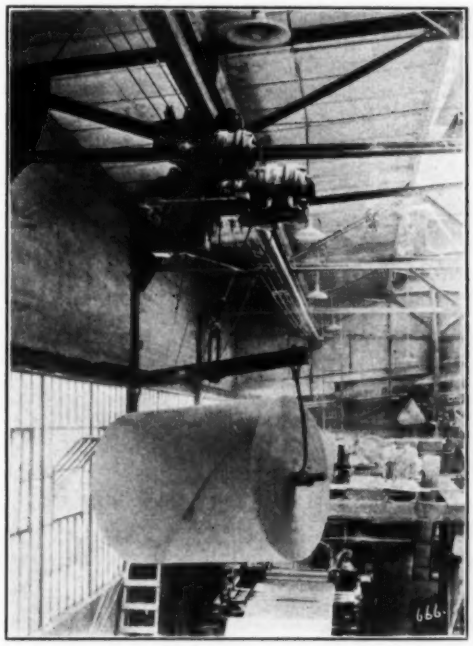
Courtesy: The American Monorail Co.

FIG. 13

Weights of rolls of paper at the Gilman Fanfold Corp. are recorded on the scale dial at the storeroom foreman's desk as the rolls journey pass from storeroom to press room.

1½-ton clam shell bucket is utilized to transfer the ashes from the tank to 2-wheel hand carts by which the refuse is removed from the building. Local conditions dictate this system of fly ash disposal, of course, and it might not be exactly adaptable to any other mill. Nevertheless, the installation is one which demonstrates the use of a materials handling tool in a service which plays an important part in the apparently unrelated economical operation of the power plant.

The use of overhead trolley hoists for miscellaneous handling operations is one of the innovations which has done much to speed up the handling and disposal of the bulky output of the paper machines and to reduce arduous labor and handling costs in the mill and store rooms. The various views presented illustrate quite typical installations of these modern materials handling tools, the savings from the use of which are so very obvious that their popularity with many mills is easily understood.



Courtesy: The Euclid Crane & Hoist Co.

FIG. 15

1-ton, 2-motor monorail hoist hauling roll of paper at the plant of the Universal Gypsum Co., Akron, N. Y.

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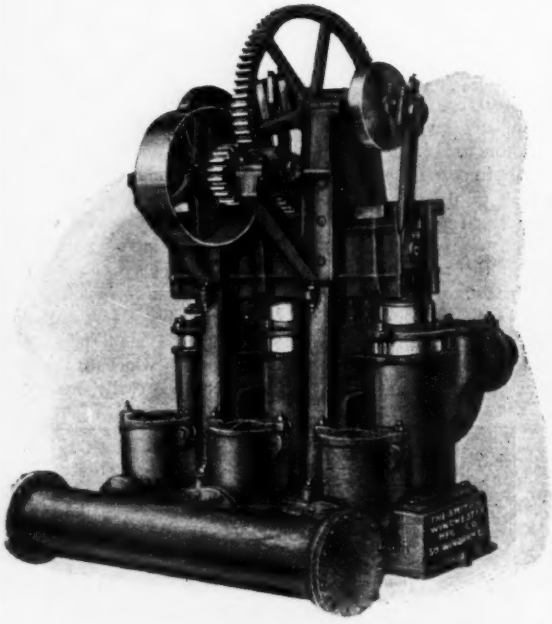
is on a par with all other Pulp and Paper Mill Equipment we manufacture. The fact of its satisfactory use in leading mills attests its efficiency.



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2. **At least 80% retention value**
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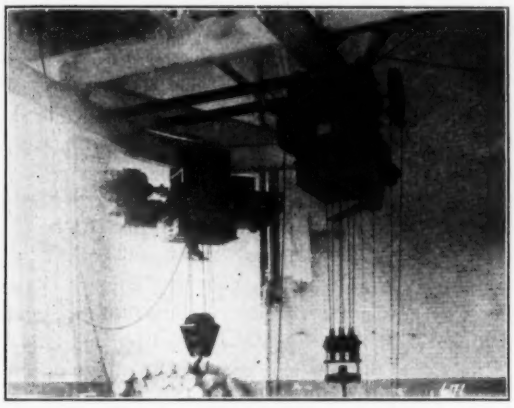


Courtesy: The Euclid Crane & Hoist Co.

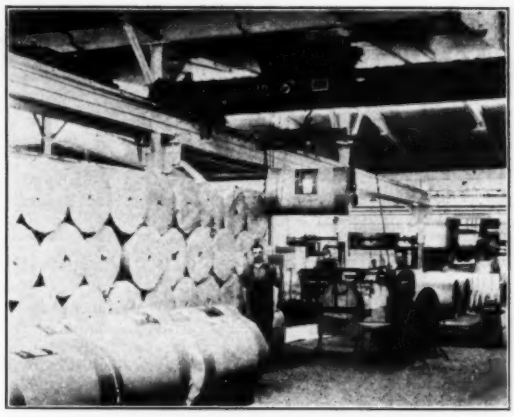
FIG. 16

Two 15-ton electric hoists suspended from hand racked trolleys at the plant of the West Virginia Pulp & Paper Co., at Covington, West Va.

The conservation of floor space in the mill, getting the bulky rolls out of the way of productive equipment, and the ease and speed with which heavy rolls may be handled make their use well nigh essential in the modern mill.

One mill was able to double its output with only 10 per cent additional equipment through such an overhead system of materials handling. Another increased its storage capacity 50 per cent by virtue of the overhead system's ability to pile material practically to the rafters of the storage building and reclaim it efficiently.

(To be continued)



Courtesy: The Euclid Crane & Hoist Co.

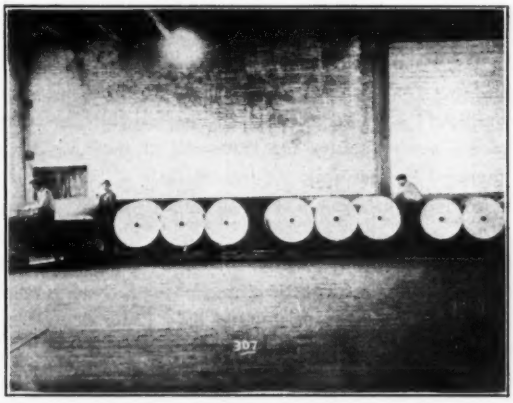
FIG. 17

2½-ton, 3-motor, floor controlled crane at the plant of the West Virginia Pulp & Paper Co. at Tyrone, Pa.

Courtesy: The Euclid Crane & Hoist Co.

FIG. 18

Monorail cab hoist on one of the 3-ton transfer bridges serving the floor at the plant of the Hinde & Dauch Paper Co., Cleveland, Ohio.



Courtesy: Mercury Mfg. Co.

FIG. 19

Tractor train handling rolls of paper in the service of the New York & Pennsylvania Co., Johnsonburg, Pa.

Courtesy: Mercury Mfg. Co.

FIG. 20

Tractor operating in close quarters at the Kimberly, Wis., plant of the Kimberly-Clark Corp.

Courtesy: Mercury Mfg. Co.

FIG. 21

Tractor train operating on 5-foot platform at the Niagara, Wis., plant of the Kimberly-Clark Corp.

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THE YEAR IN PAPER

Elsewhere in this issue of the PAPER TRADE JOURNAL are presented reviews of the various sections of the pulp and paper industry for the past year. Amplified with important statistical tables and numerous graphs showing the trend of production for a number of years past, this matter furnishes a most enlightening cross section of the paper industry for 1930. All of these reviews have been prepared by representative men in their particular lines and the information furnished may be depended upon as being trustworthy in every respect.

The reviews uniformly indicate that paper has suffered in the general depression, but with the exception of perhaps several sections, not as severely as most other basic industries. The first six months of the year were in fact quite satisfactory, but the latter half witnessed a considerable recession in the demand for all varieties of paper. In spite of the less satisfactory conditions in the last six months, the average operation for the year was 70 per cent of normal. When it is considered that operations in 1921, to which the depression of 1930 is frequently compared, averaged only 63 per cent, it will be seen that paper has been comparatively fortunate during this particular depression and why it has frequently been pointed out in business reviews as one of the most active among all the great basic industries.

News print production declined considerably during the year. This was true of the United States and more especially was the case in Canada where the industry, for obvious reasons, is so intimately related with American interests that the production of the news print mills there is usually considered with the production in the United States. The feature of outstanding interest was the placing into operation of the news print mill of the Maine Seaboard Paper Company, at Bucksport, Maine, with a prospective production of 300 tons daily. This mill is especially interesting because it is one of the very few news print mills built in the United States since 1911 when the tariff was taken off of news print, starting the movement which has made Canada the foremost producer of news print in the world. This mill, however, started late in the year and made no impression on the aggregate tonnage in the United States which was 1,282,000 tons as compared with 1,392,000 tons in 1929. The decrease is, of course, explained in part by the general depression, but in a considerable measure, also, by the closing down on this side of the line of antiquated mills which were no longer able to meet present day competition.

The news print industry in Canada suffered a trying year. It produced 2,331,000 tons as compared with 2,510,633 tons in 1929, a decrease of close to 200,000 tons for the year. In spite of this decrease, there was added during the year 832 tons daily to the rated capacity, giving the Dominion an installed rated capacity of 11,940 tons daily, which is easily a record for the world. The mills at the end of the year were operating at an average capacity of only about 60 per cent as compared with 84 per cent in 1929. The exigencies of the situation influenced several important mergers during the year and these groups, judging from indications, are likely to be formed into one or several super-mergers in the not very remote future. Some such action, it is believed, may be necessary to prevent a harmful price war, for which the incidents of depressed demand and over-capacity have favorably set the stage. While some price cutting has already been evident, it has not been as general as might be expected under the circumstances and several of the larger companies have already announced that they would maintain their present price throughout 1931. This is one of the most encouraging factors in the present situation. It is to be hoped that prices will continue more or less stabilized as the effect of a price war would, naturally, be to crowd some of the higher cost mills out of the picture altogether.

Coarse paper, except in the case of a comparatively few mills, is one of the outstanding divisions of the industry which evidenced throughout the year the great need for an improvement in merchandising methods. Some betterment in this respect was evidenced in the sulphite section of the industry where markets were more intensively studied and where through intelligent curtailment, production and demand were kept more nearly coincident. But conditions, so far as merchandising is concerned, continued rather chaotic in the kraft market. It is encouraging to know, however, that the kraft manufacturers are apparently more willing than they have been to recognize various faults in their particular branch of the industry and are taking means to correct them. Both the National Kraft Paper Manufacturers Association and the Southern Kraft Manufacturers Association have been showing commendable leadership along these lines. The expansion in the demand for kraft, representative authorities believe, will be enormous in the years just ahead and the manufacturers should in some way make plans to supply this demand at a fair profit. This is sound sense. It is advice that must be accepted actively by kraft manufacturers as a whole or the present senseless condition of affairs, which has already prevailed much too long, will continue to depress the industry.

In the book paper section of the industry, although only three machines were added during 1930, with a production of about 170 tons as compared with five in 1929 with a production of about 245 tons, this excess production, especially under the conditions of general business depression, was not easily digested. Probably this augmented tonnage could not easily have been absorbed even in a normal year, but it was certainly difficult to do so healthfully

under the conditions of the year which has just passed. While mills operated satisfactorily for the first six months, it is estimated that throughout the year they operated only about 70 per cent of their normal productive capacity. Competition during the latter months, especially, was keen, with considerable price cutting, as a result of which all grades of book paper at the close of the year were down from $5.00 to $7.00 per ton as compared with prices at the close of 1929. While no great improvement in the book market is expected before mid-summer or early autumn, no new machines, so far as is known, are to be installed this year, so that business is expected to be along more healthful lines when the revival sets in.

Fine papers during the year more nearly approached stability than any division of the industry. This was due largely to intelligent marketing and the financial resources of the mills. Manufacturers here more nearly adjusted production to consumption than in any other division of the paper business, with results that speak for themselves. Fine papers, also, undoubtedly profited from the effective advertising that has been done in the past and which will undoubtedly be carried out on an increasing scale in the future. While the year, however, was comparatively satisfactory, profits were naturally not large. In addition to the restricted demand, the small earnings are explained by the fact that especially in the last four or five years, fine paper mills have been plowing a generous share of their earnings back into costly new machinery and the modernization of their plants generally. This foresighted policy cannot fail to bring gratifying results when the expansion in the demand for these papers is resumed. While the year started well in this division, demand decreased after the first six months, but in spite of this business was about 80 per cent of normal for the entire year and the mills produced about the same quantity of paper as in 1925, which at that time was considered a very satisfactory year. As usual, there is a seasonal increase in demand just now and if this increase continues along the lines that it has in other periods when business was somewhat similar to the present, reliable authorities estimate that the business in fine papers will be between 80 and 90 per cent of normal for the entire year and soon will reach new high records again.

In the box board industry volume during the year shrunk rather seriously and prices declined to the lowest level this branch of the industry has witnessed in recent years. Reliable estimates for 1930 place the running time of the mills at 3.9 days per running week or about 65 per cent of full time, as compared with 4.6 days per running week or about 77 per cent of full time in 1929. The nominal quotation for .016 chip rolls at the end of the year was $32.50 per ton as compared with $39.40 per ton at the same time in 1929. In addition to the general depression, this branch of the paper industry suffered from the increased competition of mills making kraft liners. There are, however, encouraging aspects to the situation. The programs for increase in plant capacity have practically all been concluded and comparatively little new tonnage may be expected to come into the market in the near future. By the addition of modern machinery, more careful cost accounting and improved methods generally, mills have fairly well adjusted themselves to lower prices and have been able to compete with some other products which formerly was not possible because of the factor of cost. The popularity of fiber board for containers and package purposes is obviously increasing and it is believed that this new business can be retained and expanded as the years go along. But a stabilized price policy is much to be desired in this division of the market and this is a consummation that can be brought about only by cooperation within the industry and a sensible sales policy based on cost, intelligently figured and a selling price that will return a fair profit.

Technologically, conditions in the pulp and paper industry have been vastly improved in recent years. This side of the industry is obviously in competent hands and leaves little to be desired. The matter of marketing paper, however, has not as yet been given the attention it deserves and which it must have before satisfactory conditions throughout the industry prevail. The fine paper section of the industry furnishes good evidence of what can be done along these lines. It is to be hoped that soon paper men in general will apply the methods that have for a number of years past made fine paper the most stabilized section of the industry.

The future is not discouraging. The market for paper, it should be remembered, is one of the most resilient of all the commodity markets. This is explained by the fact that paper in human life is so commonly used and that its uses are constantly expanding so greatly. Some seasonal improvement in the demand for paper is apparent already. This is expected to continue during the spring months and a considerable betterment is expected in the fall. After the improvement establishes its momentum, it may be reasonably expected that paper will be soon on the way again not only to equal, but to surpass the record of 1929, which was the high record for both production and consumption in the American paper industry.

DUNN SULPHITE CO. HAS GOOD YEAR

The Dunn Sulphite Paper Company, Port Huron, Mich., maintained throughout 1930 the production level of 1929, which was a peak year in business, Theodore W. Dunn, president of the company, reports.

"We feel this is a good record in view of the fact that most businesses in 1930 were below the level of 1929," Mr. Dunn said.

"In addition we have managed to carry our usual working force of slightly in excess of 100 men, through the year, and we provided the men with continuous employment."

"We have maintained our employment level in spite of the fact that the prices we have received on our products have declined. We have maintained the regular wage scales," Mr. Dunn said.

"In addition we have managed to make changes and repairs in the plant. We have had a continuous fight to effect economies which would permit us to maintain our wage scales, but we have felt that we were doing our part to better employment conditions.

"Business conditions today are in a situation unparalleled by previous depressions. We can only hope that conditions will not cause the Dunn Sulphite Paper company to change its plans in regard to its production and its employment."

BLANDIN PAPER CO. IMPROVES MILL

The Blandin Paper Company, Grand Rapids, Minn., has just purchased an Allis-Chalmers 4000 KW high pressure condenser and bleeder type steam turbine of 200 lbs. pressure arranged for future 450 lbs. pressure.

The Jacobson Engineering Company of Minneapolis, has been engaged as engineers and James Leck Company of Minneapolis are the contractors.

Plans are well under way and work will go forward at once.

This is in addition to the present building now being constructed to house the new paper machine.

Quality Papers for Progressive Merchants in 1931

ANACONDA BOND
ANACONDA LEDGER
ANACONDA COVER
PONTIAC VELLUM
WHITEFIELD OFFSET
COMMERCIAL OFFSET
1930 INDEX BRISTOL
GROVETON'S MIMEOGRAPH
GROVETON'S MANIFOLD
SATURATING PAPERS
GROVETON FOLDING
BRISTOL
ENGLISH ENGRAVURE
GROBULK BOOK

Also Dello Bond & Ledger, Drug Bond Snowcap and Surety Envelope, "A," "C" and Special Manila, Music Roll, Die Wiping, Oiled Tympan, Railroad Writing, Bond Pads.

Manila Folder and Manila Tag.

Groveton Paper Co. Inc.

MAIN OFFICE AND MILLS
GROVETON, NEW HAMPSHIRE
TEL. 54

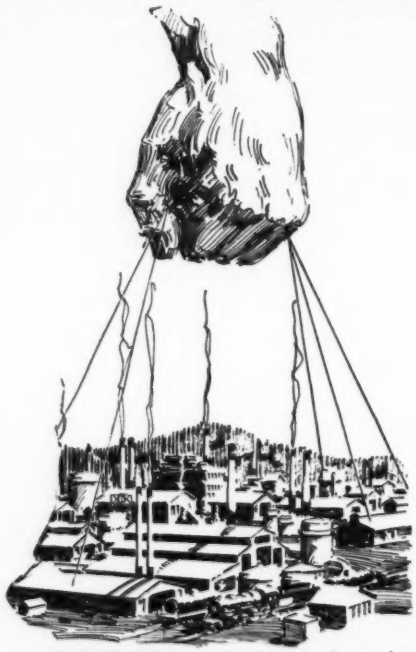
BOSTON OFFICE
80 FEDERAL STREET
Tel. Hancock 4043

NEW YORK OFFICE
11 WEST 42D STREET
Tel. Penn. 3643

PHILADELPHIA OFFICE
226 LAFAYETTE BLDG.
Tel. Lombard 1623

CHICAGO OFFICE
327 SO. LA SALLE STREET
Tel. Harrison 5443

CHEMICAL SCIENCE
. . . raises the paper industry to higher levels.



CHEMISTRY and Chemical engineering are keeping many a paper and pulp mill out of the red, can do the same for many others, will do it for all who know how to utilize these great forces.

Every man responsible for methods, materials, machinery, processing efficiency, product quality and sales promotion in any branch of the paper and pulp industry, owes it to himself, his profession, his employers and his Country to maintain that leadership necessary to prosperity via Chemistry and the allied sciences.

Ready to the hand of those for whom chemical science can do so much is this year's Exposition of Chemical Industries. Viewed as a whole it will be a striking demonstration of Industry transformed by Science.

Viewed in detail, it is a post-graduate course without which previous education is hopelessly handicapped in dealing with the needs of the day.

Available at this great national institution of learning will be opportunities to discuss your interests with hundreds of specialists in attendance to serve you.

Exhibits—visual, tangible, comparable embodiments of progress include processing equipment, instruments of precision, chemicals, chemical products, laboratory supplies and a wide variety of technical products used in pulp and paper making.

Attending this Exposition yourself is not enough. Bring from your organization those who have operating responsibilities requiring knowledge of modern methods, machines, materials. And bring those whose "sayso" counts when newer, better equipment is needed. They'll be glad they came. So will you.

13th EXPOSITION
CHEMICAL INDUSTRIES

Management International Exposition Company

5246D

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 14, 1931

SUMMARY

Cigarette paper.....625 cs.
Wall paper.....17 bls., 23 cs.
Paper hangings.....1 ble.
New print.....1778 rolls
Printing paper.....77 rolls, 123 cs.
Packing paper.....5 bls.
Wrapping paper.....10 cs.
Drawing paper.....36 cs.
Filter paper.....4 bls., 27 cs.
Colored paper.....100 cs.
Gauze tissue paper.....2 cs.
Metal covered paper.....75 cs.
Baryta coated paper.....74 cs.
Gold coated paper.....5 cs.
Surface coated paper.....6 cs.
Coated paper.....3 cs.
Basic paper.....16 cs.
Aluminum paper.....9 cs.
Decalcomania paper.....36 cs.
Photo paper.....9 cs.
Note paper.....1 cs.
Writing paper.....6 cs.
Envelopes.....51 cs.
Shelf paper.....14 cs.
Carbon paper.....1 cs.
Litmus paper.....1 cs.
Cover paper.....5 cs.
Stencil paper.....2 cs.
Stencil paper and ink.....20 cs.
Card board.....182 cs.
Miscellaneous paper....89 rolls, 74 pkgs., 205 cs.

CIGARETTE PAPER

De Manduit Paper Corp., Schodack, Havre, 417 cs.

Liggett & Myers Tobacco Co., La Bourdonnais, Bordeaux, 8 cs.

American Tobacco Co., La Bourdonnais, Bordeaux, 200 cs.

WALL PAPER

G. I. Hunken Co., Stuttgart, Bremen, 1 cs.

R. F. Downing & Co., Amer. Trader, London, 11 bls.

F. J. Emmerich, Adriatic, Liverpool, 4 bls.

F. J. Emmerich, A. Ballin, Hamburg, 22 cs.

Globe Shipping Co., A. Ballin, Hamburg, 1 ble.

D. C. Andrews & Co., A. Ballin, Hamburg, 1 ble.

PAPER HANGINGS

A. C. Doman, Jr., Inc., Adriatic, Liverpool, 1 ble.

NEWS PRINT

Jay Madden Corp., Stuttgart, Bremen, 143 rolls.

Wilkinson Bros. & Co., Inc., Frederick VIII, Oslo, 49 rolls.

Perkins, Goodwin & Co., Pr. Harding, Hamburg, 387 rolls.

Parsons & Whittemore, Inc., Pr. Harding, Hamburg, 297 rolls.

Lunham & Reeve, Blankaholm, Helsingfors, 443 rolls.

Perkins, Goodwin & Co., A. Ballin, Hamburg, 459 rolls.

PRINTING PAPER

Henschel, Naeve Co., Inc., Saco, Rotterdam, 13 cs.

C. Steiner, Stuttgart, Bremen, 8 cs.

International F'd'g. Co., H. Jaspar, Antwerp, 22 cs.

Keuffel & Esser Co., Pr. Harding, Hamburg, 77 rolls.

Martin & Bechtold, A. Ballin, Hamburg, 36 cs.

E. Dietzgen & Co., A. Ballin, Hamburg, 44 cs.

PACKING PAPER

Quality Art Novelty Co., Stuttgart, Bremen, 5 bls.

WRAPPING PAPER

Atlantic F'd'g. Co., A. Ballin, Hamburg, 1 cs.

——, Mauretania, Southampton, 9 cs.

DRAWING PAPER

D. F. Young, Stuttgart, Bremen, 2 cs.

H. Reeve Angel & Co., Inc., Amer. Trader, London, 5 cs.

Keuffel & Esser Co., Pr. Harding, Hamburg, 27 cs.

Favor Ruhl & Co., Lafayette, Havre, 2 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Amer. Trader, London, 11 cs.

C. Schleicher Schull Co., Inc., A. Ballin, Hamburg, 4 bls., 16 cs.

COLORED PAPER

H. Lange, Stuttgart, Bremen, 2 cs.

S. Gilbert, Stuttgart, Bremen, 1 cs.

J. Beckhard Co., Stuttgart, Bremen, 5 cs.

S. Dietzgen & Co., A. Ballin, Hamburg, 87 cs.

National Freight F'd'g Co., A. Ballin, Hamburg, 5 cs.

GAUZE TISSUE PAPER

B. F. Drakenfeld & Co., Adriatic, Liverpool, 2 cs.

METAL COVERED PAPER

Globe Shipping Co., Stuttgart, Bremen, 55 cs.

K. Pauli Corp., A. Ballin, Hamburg, 20 cs.

BARYTA COATED PAPER

K. Pauli Corp., Stuttgart, Bremen, 1 cs.

Globe Shipping Co., Stuttgart, Bremen, 52 cs.

J. H. Schroeder Banking Corp., Stuttgart, Bremen, 21 cs.

GOLD COATED PAPER

Weiss F'd'g. Co., Stuttgart, Bremen, 5 cs.

SURFACE COATED PAPER

Phoenix Shipping Co., A. Ballin, Hamburg, 1 cs.

International F'd'g. Co., A. Ballin, Hamburg, 5 cs.

COATED PAPER

Bank of America Natl. Assn., A. Ballin, Hamburg, 3 cs.

BASIC PAPER

Globe Shipping Co., Stuttgart, Bremen, 16 cs.

ALUMINUM PAPER

Keller Dorian Paper Co., Stuttgart, Bremen, 9 cs.

DECALCOMANIA PAPER

Phoenix Shipping Co., Stuttgart, Bremen, 2 cs.

C. W. Sellers, Europa, Bremen, 10 cs.

L. A. Consmiller, Europa, Bremen, 7 cs.

L. A. Consmiller, A. Ballin, Hamburg, 7 cs.

C. W. Sellers, A. Ballin, Hamburg, 10 cs.

PHOTO PAPER

J. H. Schroeder Banking Corp., Stuttgart, Bremen, 4 cs.

J. H. Schroeder Banking Corp., Europa, Bremen, 1 cs.

J. J. Gavin, Mauretania, Southampton, 4 cs.

NOTE PAPER

H. Reeve Angel & Co., Inc., Amer. Trader, London, 1 cs.

WRITING PAPER

H. Arndus & Son, Lafayette, Havre, 1 cs.

Globe Shipping Co., Stuttgart, Bremen, 5 cs.

ENVELOPES

J. Beckhard Co., Stuttgart, Bremen, 45 cs.

J. Beckhard Co., Europa, Bremen, 6 cs.

SHELF PAPER

Kaplan Bros., Stuttgart, Bremen, 8 cs.

Kaplan Bros., Europa, Bremen, 6 cs.

CARBON PAPER

Charta Corp., Takaoka Maru, Osaka, 1 cs.

LITMUS PAPER

Pfalz & Bauer, A. Ballin, Hamburg, 1 cs.

COVER PAPER

International F'd'g. Co., A. Ballin, Hamburg, 5 cs.

STENCIL PAPER

International F'd'g. Co., A. Ballin, Hamburg, 2 cs.

STENCIL PAPER AND INK

Arlac Dry Stencil Co., A. Ballin, Hamburg, 20 cs.

CARDBOARD

American Express Co., A. Ballin, Hamburg, 182 cs.

MISCELLANEOUS PAPER

R. Wilson Paper Corp., Cameronia, Glasgow, 20 cs.

Hensel Bruckman & Lorbacher, Stuttgart, Bremen, 12 cs.

Japan Paper Co., Stuttgart, Bremen, 7 cs.

Manufacturers Trust Co., H. Jaspar, Antwerp, 74 pkgs.

Thomas & Pierson, Mauretania, Southampton, 5 cs.

D. C. Andrews & Co., Lafayette, Havre, 1 cs.

Japan Paper Co., Lafayette, Havre, 2 cs.

A. Flinn & Co., Lafayette, Havre, 2 cs.

Standard Products Corp., Lafayette, Havre, 115 cs.

Keller, Dorian Paper Co., Lafayette, Havre, 20 cs.

Agfa Ansco Corp., A. Ballin Hamburg, 15 cs.

Meadows, Wye & Co., A. Ballin, Hamburg, 6 cs.

——, A. Ballin, Hamburg, 89 rolls.

BAGS, BAGGINGS, ETC.

C. Nelson, Cameronia, Glasgow, 41 bls. rags.

T. D. Downing & Co., Cameronia, Glasgow, 53 bls. bagging.

Baring Bros. & Co., Cameronia, Glasgow, 148 bls. paper stock.

International Accep. Bank, Stuttgart, Bremen, 51 bls. bagging.

Castle & Overton, Inc., Sud Atlantico, B. Ayres, 39 bls. jute cuttings; 16 bls. canvas.

M. Snedeker Corp., Adriatic, Liverpool, 79 bls. thread waste; 30 bls. paper stock.

E. J. Keller Co., Inc., Schodack, ——, 102 bls. bagging; 23 bls. new rags.

Castle & Overton, Inc., Schodack, Havre, 32 bls. new cuttings.

Banco Com'l Italiane Trust Co., Exchester, Genoa, 89 bls. bagging.

Darmstadt, Scott & Courtney, Exchester, Genoa, 82 bls. bagging.

F. J. Fawcett, Ala, Antwerp, 69 bls. flax waste.

W. Steck & Co., Pr. Harding, Hamburg, 23 bls. cotton waste.

R. Canovai & Son, Cabo Villano, Leghorn, 46 bls. rags.

OLD ROPE

Chemical Bank & Trust Co., H. Jaspar, Antwerp, 73 coils;

W. Steck & Co., Japanese Prince, Naples, 36 coils;

W. Steck & Co., Pr. Harding, Hamburg, 46 coils.

Brown Bros., Harriman & Co., Cabo Villano, Huelva, 239 rolls, 68 bls.

Brown Bros., Harriman & Co., Alfonso XIII, Coruna, 30 bls.

CASEIN

A. Hurst & Co., Sud Atlantico, B. Ayres, 584 bags, 35040 kilos.

WOOD PULP

A. P. W. Pulp & Power Co., R. Jarl, Sheet Harbor, 8553 bls. mechanical pulp, 1912 tons.

Kopperberg & Hofors Aagverks, Aktiebolag, Schenectady, Norrsundet, 20000 bls. sulphate, 4000 tons.

Atterbury Bros., Inc., Tonsbergfjord, Oslo, 300 bls. sulphite.

Chemical Bank & Trust Co., Tonsbergfjord, Oslo, 1500 bls. sulphite.

J. Andersen & Co., Tonsbergfjord, Oslo, 3035 bls. sulphite.

M. Gottesman & Co., Inc., Saco, Rotterdam, 525 bls. wood pulp 52 tons.

Bulkley, Dunton & Co., Odensholm, ——, 4500 bls. wood pulp.

Pagel, Horton & Co., Inc., Odensholm, Gefle, 625 bls. sulphite.

Lagerloef Trading Co., Blankaholm, Helsingfors, 1090 bls. sulphite.

Lagerloef Trading Co., Blankaholm, Hango, 1086 bls. sulphite; 1964 bls. sulphate.

Castle & Overton, Inc., A. Ballin, Hamburg, 1400 bls. wood pulp, 280 tons.

(Continued on page 227)

The SIGN *of* DEPENDABILITY

The Nashua Trade Mark for the past 80 years has stood for quality and progress—and the trade has come to recognize it as a symbol of dependability.

Nashua has steadily set the pace for the industry, backed by the research, testing and experimentation of its chemists and paper specialists.

Solving difficult paper problems has become an every day occurrence with these experts. You are invited to consult them freely regarding.

Coated Papers
Printed Papers
Embossed Papers
Metal Papers
Gummed Papers
Waxed Papers
Velour Papers
Gummed Tapes
Roll Leaf

for use in wrapping, boxing, packaging and marketing innumerable products.

A designing department is also at your service for the development of new merchandising methods or the improvement of old ones—put your paper problems up to Nashua experts for gratifying results.

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PETERBORO ONTARIO CANADA

Offices in principal cities

For

Thin Letterheads
Records - Forms

Recommend

Fidelity Onion Skin

— or —

Emco Onion Skin

THE SUMMIT OF QUALITY
ESLEECK'S THIN PAPERS
MADE AT TURNERS FALLS, MASS. BY
ESLEECK MFG. COMPANY

Save Postage and Filing Space

USE BETTER PAPERS
THE BEST PAPERS ARE MADE FROM RAGS
FOR DURABILITY · FOR IMPERISHABLENESS

ESLEECK MANUFACTURING CO.

TURNERS FALLS, MASS.

Imports of Paper and Paper Stock

(Continued from page 225)

——, A. Ballin, Hamburg, 260 bls. wood pulp, 52 tons.
E. J. Keller Co., Inc., A. Ballin, ——, 361 bls. wood pulp, 56 tons.
Bulkley, Dunton & Co., A. Ballin, ——, 1000 bls. wood pulp, 203 tons.

WOOD FLOUR

B. L. Soberski, Tonsbergfjord, Frederickstad, 1500 bags.
Composition Materials Co., Tonsbergfjord, Flekkefjord, 100 bags.

BALTIMORE IMPORTS

WEEK ENDING FEBRUARY 14, 1931

Perkins, Goodwin & Co., Adensholm, Norrsundet, 3250 bls. sulphate.
Brown Bros., Harriman & Co., Odensholm, Iggesund, 375 bls. sulphate.
Bulkley, Dunton & Co., Odensholm, ——, 5000 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 14, 1931

Perkins, Goodwin & Co., Schenectady, Norrsundet, 8625 bls. sulphate, 1725 tons.
Kopperberg & Hofors Sagverks, Aktiebolag, Norrsundet, 3375 bls. sulphate, 675 tons.
Perkins, Goodwin & Co., Odensholm, Norrsundet, 6125 bls. sulphate.
Pagel, Horton & Co., Inc., Odensholm, Gefle, 2500 bls. sulphite.
Bulkley, Dunton & Co., Odensholm, ——, 750 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 14, 1931

J. A. Steer & Co., Schodack, Havre, 52 bls. rags.
E. J. Keller Co., Inc., Schodack, ——, 115 bls. rags.
E. J. Keller Co., Inc., Elmshorn, ——, 58 lbs. old cottons; 84 bls. bagging.

NORFOLK IMPORTS

WEEK ENDING FEBRUARY 14, 1931

Darmstadt, Scott & Courtney, Ala, Antwerp, 120 bls. bagging.

GENERATOR STARTS AT GRAND FALLS

The fourth 20,000 h. p. generator in the Grand Falls, New Brunswick, hydro-electric plant has been placed in commercial operation by International Hydro-Electric System, a division of International Paper and Power Company. With the starting of this unit, the full installation of 80,000 hp. in the power house has been completed, and one of the greatest engineering undertakings in the Province brought to a successful culmination.

The installation of the new unit at Grand Falls raises to 1,099,000 hp. the aggregate capacity now in operation in all of the hydro-electric generating plants of International Hydro-Electric System. In addition, the System has a 14,000 hp. hydro-electric development nearing completion at McIndoes Falls on the Connecticut River, seven miles down stream from the new 216,000 hp. Fifteen Mile Falls plant, and has ordered the seventh 34,000 hp. unit for installation in its Paugan generating station on the Gatineau River, Quebec. Upon the completion of these two new installations, the total installed capacity of the hydro-electric plants of International Hydro-Electric System will be raised to 1,147,000 hp.

These hydro-electric stations can house, without expansion of their structures, an additional 130,000 hp. which will be installed when required by the growing demand for electric energy. Undeveloped water powers of the System in the United States and Canada aggregate over half a million h.p.

The harnessing of the power at Grand Falls has meant not only the outlay of millions of dollars for the development at that point, but has also resulted in the expenditure of many millions more in the Dalhousie news print mill of New Brunswick International Paper Company, and in the extension of the Edmunston pulp mill of Fraser Companies, Ltd., both of which draw electric power from the Grand Falls development.

NEWFOUNDLAND PROJECT POSTPONED

Information of much interest, not only to investors, but to the pulp and paper industry at large, is contained in a lengthy communication from the Canada Power and Paper Corporation, submitted at the request of the Montreal Stock Exchange.

For instance, it is shown that the project for the establishment of a 1,000-ton newsprint mill on the Gander River in Newfoundland has been postponed for an indefinite period owing to the present unsettlement in the industry. This will come as good news for Canadian products, who have been looking askance at Newfoundland news print mills, which are running regularly at over 100 per cent capacity and constantly increasing output. A further addition of 1000 tons per day to Newfoundland's productive capacity would work havoc with Canadian competition.

It is also revealed that it was due to the postponement of this project that Canada Power and Paper secured the Hearst contract. Through an exchange of stock, Canada Power and Paper secured an interest in The Dominion Newsprint Company, which was fostered by the Hearst interests and formed for the purpose of carrying through the Newfoundland project. The Hearst buying organization had a contract with the Dominion Newsprint Company covering all the Hearst requirements for newsprint for 15 years. This contract has been taken over by Canada Power and Paper, and will come into effect in 1934. The company's letter to the Montreal Stock Exchange refers to this in stressing the favorable long-term outlook of the Company. Although the definite tonnage is not stated, it is understood that the Hearst requirements run to around 540,000 tons per annum.

BUILDS HUGE UNIVERSAL BOARD PRESS

The first machine of its kind, the mammoth board press, recently designed, patterned, cast and machined by the Birdsboro Steel Foundry and Machine Company, Birdsboro, Pa., is now performing in one of the country's large manufacturing plants, to a great percentage of its total, daily output.

The press, as illustrated elsewhere in this issue, clearly demonstrates its relative size by the man standing in the foreground. The simplicty of its operation is also perceptible by the centralization of all control levers to the extreme right. The main feature of the machine is its ability to turn out a maximum of board product with a minimum of moisture content, thus requiring less time in the board's drying operation. The press, in itself, is universal, being capable of producing insulating board of ½ to 3 inches in thickness and semi-hard and hard boards ⅛ to 1 inch in thickness. These variations may be acquired quickly and most accurately with almost any grade of stock such as: sawmll waste, corn stalks, sugar cane or other vegetable fibres.

The large platen and miscellaneous other castings that make up the unit were all cast of Birdsboro open hearth steel. The press was fully assembled and tested at the point of its manufacture, prior to shipping. Its construction being suited for re-design and individual customer requirements.

ORGANIZE SANGAMON CORP.

A. J. Westrick, who was with the Kalamazoo Stationery Company for seventeen years, has organized the Sangamon Company, an Illinois Corporation, located in Taylorville, Ill., for the manufacture of fine stationery, writing tablets and greeting cards.

The new company has leased a building adjacent to the Hopper Paper Mill, which for several years has specialized in the manufacture of high grade papers for fine stationery and greeting cards.

The company will begin active operations this month with a daily capacity of 750,000 envelopes, 20,000 lbs. of flat or folded papers, 500,000 greeting cards and 50,000 tablets.

Courtlandt B. Griffin
President

George E. Bardwell
Treasurer

Carew Manufacturing Company

Incorporated 1848

South Hadley Falls, Mass.

MAKERS OF

POLE DRIED PAPERS
LEDGER—BOND—PAPETERIE
COVER—INDEX AND SPECIALTIES

Gilman Paper Company

Manufacturing Daily

60 TONS OF No. 1 NORTHERN KRAFT PAPER
50 TONS OF GROUND WOOD
50 TONS OF PRINT NEWS
No. 1 NORTHERN SPRUCE KRAFT GUMMED TAPE

PAPER BAGS AND SACKS

Executive Offices, 475 Fifth Ave., New York
Mills and Bag Factory at Gilman, Vermont

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, February 18, 1931.

Conditions in the local paper market are showing some signs of improvement and a more optimistic feeling is being reflected by manufacturers from all over the country attending the annual convention of the American Paper and Pulp Association at the Hotel Pennsylvania this week. Demand for the various standard grades is fairly persistent. Prices are generally holding to previously quoted levels.

There have been no further developments in the news print situation although rumors of consolidations are rife. Production in the United States and Canada is being maintained at about 60 per cent of capacity, according to information gathered by the News Print Service Bureau. Shipments are going forward at approximately the same ratio.

The paper board market is somewhat steadier. Production of box board is proceeding at from 65 to 70 per cent of full time operation. Prices are generally holding to schedule. The fine paper market continues in a sound position. Tissues are moving in fairly satisfactory volume. The coarse paper market is more active and production and shipments of wrapping paper have increased.

Mechanical Pulp

Steadiness prevails in the ground wood market. Although the demand for both foreign and domestic mechanical pulp is light at present, offerings are somewhat limited, due to curtailment of production. Inquiries for future needs are fairly numerous. Prices are generally being maintained at previously quoted levels, without difficulty.

Chemical Pulp

The chemical pulp market was moderately active during the past week. Judging from the number of inquiries around, trading should become more lively in the near future. Contract shipments are going forward to the paper mills in fairly satisfactory volume. Prices are holding to schedule, in most instances, and reports of concessions are less frequent.

Old Rope and Bagging

Demand for old rope was rather light. The movement of domestic and imported old manila rope was along seasonal lines. Small mixed rope is moving in fair volume. Prices remain unchanged. The bagging market is displaying a steady trend. Both gunny and roofing bagging are in excellent request. New burlap cuttings are moving in good volume.

Rags

The domestic rag market continues to show signs of improvement. The various grades of cotton cuttings are more active. Roofing rags are decidedly firmer. Mixed rags, however, are rather quiet. Prices are being maintained at recently quoted levels. Paper mills are beginning to show greater interest in the imported rag market. Dark cottons are steadier than of late.

Waste Paper

Now that production of paper board is expanding, the outlook for the lower grades of paper stock is more encouraging. No. 1 mixed paper and strictly folded news are in better demand than for some time past. The higher grades of waste paper continue steady. Offerings are not excessive and prices are generally holding to schedule.

Twine

Business in the local twine market was rather quiet during the past week and what transactions took place were mostly along routine lines. However, prospects for the future are encouraging as inquiries are fairly numerous and a heavy Spring demand is anticipated in most quarters. Prices generally remain unchanged.

FAIR SALES IN BOSTON MARKET

A fair volume of sales was made by paper dealers in the Boston market during the last week. A number of the wholesalers say that "things are looking up" with more inquiries and more actual business resulting from these inquiries. A great trouble which continues to be voiced is the "unfair competition," much in evidence at this time. One of the dealers who reports many inquiries says that "prices are ridiculous." Bonds and writings are moving moderately, as a whole. It is understood that some of the manufacturers of blotting papers are reducing their prices a cent on some grades. Fancy box coverings and wrappings are selling fairly well. Wrapping paper has improved slightly, with prices strong. Box board has not been so active so far in February as for the previous month, although prices are firm.

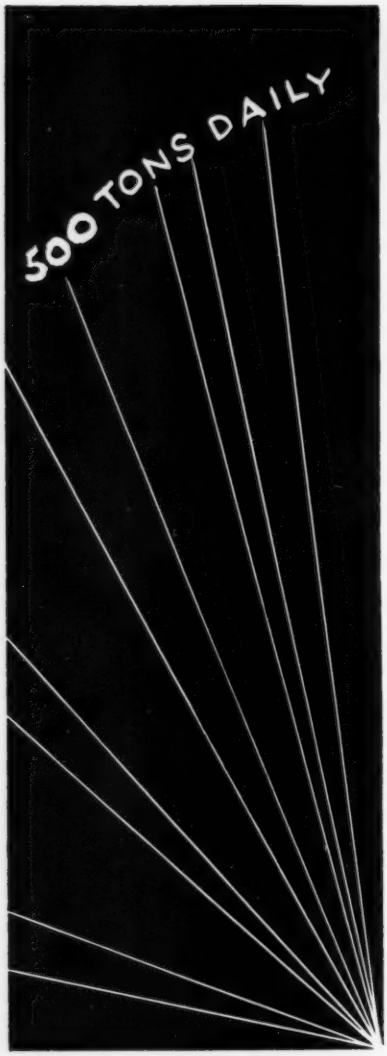
Sales of waste paper appear to be somewhat spotty. In some quarters there is no movement, but in others old papers are more active, although at no higher prices. As a whole, conditions seem slightly better in paper stock.

There are a few buyers of rope in the market. Foreign old manila has a somewhat downward tendency. Rags are a bit improved. Several mills have been making inquiries for roofing rags so that new importations are being made, although not in great volume yet. The movement has probably been brought about by new construction. For several months there had been practically no importation of roofing rags. Foreign lace curtains have been removed from the list of available commodities because there are no importations, on account of the high duty. Sales have been made since last summer, but the supply is now exhausted.

ALGONQUIN ELECTS OFFICERS

The annual meeting of the stockholders of the Algonquin Paper Company was held here this week when officers and directors were chosen for the year. The directors elected included Frank A. Augsbury, Willard S. Augsbury, Arthur Whalen, W. E. Westbrook and Clarence Cook. The officers appointed are as follows: Frank A. Augsbury, president; Clarence Cook, vice-president; William E. Westbrook, secretary and treasurer. The new member of the board of directors is Arthur Whalen.

The George Hall Corporation, affiliated with the Algonquin concern, elected the following directors: Frank A. Augsbury, John A. Bovard, Hewlett P. Strong, Albert Hutchinson, and Willard S. Augsbury. Frank A. Augsbury was re-elected president. The company operates a fleet of vessels over the St. Lawrence River route and has been the principal means of moving large quantities of pulp wood to the local paper company.



H.T. BRAND

THE CLAY OF UNIFORMITY

FOR COATING AND FILLING

The superior qualities of Edgar Clays are recognized by American Coating and Paper Mills.

Technical Service available for coating and loading without charge.

Also producers of

KLONDYKE BRAND FILLER CLAYS

"American Made for American Trade"

EDGAR CLAYS

EDGAR BROTHERS CO.
50 CHURCH ST. NEW YORK

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, February 18, 1931.

BLANC FIXE.—No radical changes were reported in the blanc fixe market. Both the pulp and the powder are in normal demand for the season. The pulp is still quoted at from $42.50 to $45.00 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Shipments against contract are going forward in good volume. Prices are generally holding to schedule. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in drums, at works.

CASEIN.—Further weaknesses developed in the casein market. Domestic standard ground is quoted at 8½ cents and finely ground at 11½ cents per pound; while Argentine standard ground is selling at 10 cents and finely ground at 11 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Most of the business transacted in the caustic soda market was along routine lines. The contract movement was well up to average. Solid caustic soda is quoted at from $2.50 to $2.55, while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market, was moderately active. Contract shipments are going forward in satisfactory volume. Prices remain unchanged. Imported china clay is quoted at from $13 to $21 per ton, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—Some improvement was noticed in the chlorine market. Demand is fairly persistent and shipments against contract are moving to the paper mills at a steady pace. Prices remain unchanged. Chlorine is quoted at $2.50 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is exhibiting a strong undertone. Prices are firmer. The grades of gum rosin used in the paper mills are now quoted at from $5.35 to $5.75 per 280 pounds, in barrels, at yards. Wood rosin is selling at $3.90 per 280 pounds, in car lots, at southern shipping points.

SALT CAKE.—Steadiness prevailed in the salt cake market during the past week. The contract movement was about normal. Prices remain unchanged. Salt cake is quoted at from $16 to $17; German salt cake at from $15.50 to $16, and chrome salt cake at from $14 to $15 per ton, in bulk, at works.

SODA ASH.—The soda ash market was rather quiet although contract shipments are going forward to the paper mills in good volume. Prices remain unaltered. Contract quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.15; and in barrels, $1.38.

STARCH.—Trading in the starch market was moderately active. Supplies are moving to the paper mills with regularity. Inquiries for future needs are fairly numerous. Prices are unchanged. Special paper making starch is quoted at $3.12, in bags; and at $3.39 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Demand for sulphate of alumina is fairly satisfactory for the time of year. Prices are holding to formerly quoted levels. Commercial grades are selling at from $1.25 to $1.40; and iron free is offered at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market was rather quiet. Prices remain steady and unchanged. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads the quotation is $21 per ton.

TALC.—Offerings of talc are quite sufficient to take care of current needs. Demand is mostly seasonal. Prices are holding to schedule, without difficulty. Domestic talc is quoted at from $16 to $18 per ton, in bulk; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	6.75	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	5.50	@	—
M. F.	5.25	@	—
Coated and Enamel	7.00	@	10.50
Lithograph	7.50	@	12.00
Tissues—Per Ream—			
White No. 1	.65	@	.67½
Anti-Tarnish M G only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.57½
Kraft	.65	@	.70
Manila	.55	@	.57½
Kraft—			
No. 1 Domestic	4.25	@	5.30
No. 2 Domestic	3.00	@	3.75
Southern	3.00	@	3.75
Imported	6.00	@	7.00
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Rolls, contract	62.00	@	—
Rolls, spot	62.00	@	—
Sheets	67.00	@	—
Side Runs	47.00	@	52.00
Boards—per ton—			
News	32.50	@	35.00
Straw	40.00	@	45.00
Chip	30.00	@	32.00
Binders' Boards	65.00	@	70.00
Standard Test Jute Liner	40.00	@	42.00
Sgl. Mla. Ll. Chip	42.50	@	—

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	28.00	@	32.00
Dry	30.00	@	34.00

(F. o. b. Mill)

No. 1 Domestic	28.00	@	34.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	3.00	@	4.25
Easy Bleaching	2.60	@	2.80
No. 1 strong unbleached	2.00	@	2.65
Mitscherlich unbleached	2.15	@	2.70
No. 2 strong unbleached	1.95	@	2.05
No. 1 Kraft	1.50	@	1.75
No. 2 Kraft	1.40	@	1.55
Sulphate—			
Bleached	3.00	@	3.50

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.40	@	4.75
Easy Bleaching Sulphite	2.55	@	2.75
News Sulphite	2.35	@	2.60
Mitscherlich	2.50	@	3.25
Kraft (Domestic)	1.60	@	2.75
Soda Bleached	2.75	@	2.90

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.50
New White, No. 2	7.00	@	7.25
Silesias No. 1	6.00	@	6.50
New Unbleached	8.00	@	8.50
New Blue Prints	5.00	@	5.50
New Soft Blacks	4.00	@	4.50
Blue Overall	6.00	@	6.25
Washables	3.75	@	4.00
Fancy	4.00	@	4.50
Mixed Khaki Cuttings	4.25	@	5.25
Pink Corset Cuttings	6.50	@	7.00
O. D. Khaki Cuttings	5.15	@	5.75
Men's Corduroy	3.00	@	3.50
New Mixed Blacks	3.00	@	3.25

Old Rags

White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags

New Rags

New Dark Cuttings	2.15	@	2.40
New Mixed Cuttings	2.25	@	2.50
New Light Silesias	5.75	@	6.25
Light Flannelettes	6.25	@	6.75
Unbleached Cuttings	7.50	@	8.00
New White Cuttings	7.25	@	7.75
New Light Oxfords	5.75	@	6.25
New Light Prints	4.25	@	4.75

Old Rags

No. 1 White Linens	7.00	@	7.50
No. 2 White Linens	5.50	@	6.00
No. 3 White Linens	4.00	@	4.50
No. 4 White Linens	2.50	@	3.00
No. 1 White Cotton	5.00	@	5.50
No. 2 White Cotton	4.00	@	4.50
No. 3 White Cotton	2.75	@	3.75
No. 4 White Cotton	1.60	@	1.75
Extra Light Prints	2.50	@	2.75
Ord. Light Prints	2.10	@	2.25
Med. Light Prints	1.65	@	1.75
Dutch Blue Cottons	1.90	@	2.10
French Blue Linens	2.65	@	2.75
German Blue Linens	2.25	@	2.40
German Blue Cottons	1.75	@	1.85
Checks and Blues	1.60	@	1.75
Lindsay Garments	1.10	@	1.20
Dark Cottons	.80	@	.90
Old Shopperies	.75	@	.80
New Shopperies	.75	@	.80
French Blues	1.80	@	1.90

Old Rope and Bagging

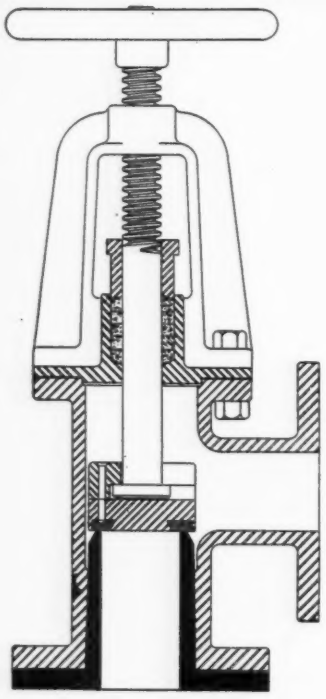
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.65	@	1.80
Domestic	1.65	@	1.80
Wool Tares, light	1.30	@	1.40
Wool Tares, heavy	1.35	@	1.40
Bright Bagging	1.30	@	1.35
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	2.50	@	2.60
Domestic	2.75	@	300
New Burlap Cut	2.25	@	2.50
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	2.75	@	2.85
Hard White, No. 2	2.30	@	2.40
Soft, white, No. 1	2.50	@	2.60
White envelope cuttings	2.95	@	3.05
Flat Stock—			
Stitchless	.90	@	1.00
Overissue Mag.	.90	@	1.00
Solid Flat Book	.75	@	.85
Crumpled No. 1	.60	@	.70
Solid Book Ledger	1.90	@	2.00
Ledger Stock	.80	@	.90
New B. B. Chips	.20	@	.30
Manila—			
New Env. Cut	2.00	@	2.20
New Cuttings	1.50	@	1.65
Extra No. 1 old	1.25	@	1.35
Print	.50	@	.60
Bogus Wrapper	.50	@	.60
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	1.20	@	1.30
News—			
No. 1 White News	1.70	@	1.80
Strictly Overissue	.40	@	.45
Strictly Folded	.30	@	.35
No. 1 Mixed Paper	.15	@	.20
Common Paper			Nominal



This Particular Type of

Hardy Angle Valve

Made only in Chrome-Nickel Steel

is specially designed for service in

Acid and Steam Lines

THE seat is a free taper fit into the body and cannot work loose. It is easily removed for redressing. A gasket between flanges prevents leaking. There are no parts to cross thread and stick. Plain disc without lead most satisfactory.

Wm. A. Hardy & Sons Co. **Fitchburg, Mass.**

THE PARKER-YOUNG COMPANY

Paper Manufacturers

ENVELOPE PAPERS
PEMI WHITE WOVE
PEMI BOND (White & Colors)
PEMI VELLUM
PEMI ANTIQUE
MYSTIC BLUE (Duplex)
LIBERTY MANILA
DIXVILLE MANILA

THE PARKER YOUNG COMPANY MANUFACTURERS Established 1943

SULPHITE BONDS
WRITINGS
HIGH GRADE MANILAS
FOLDER MANILA
GROUNDWOOD TABLET
GROUNDWOOD COATING
HALFTONE

A Permanent and Reliable Source of Supply

Pulp and Paper Mills at LINCOLN, N. H.

Sales Offices at 131 State St. BOSTON, MASS.

Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.32	@	.34
No. 1	.22	@	.24
No. 2	.21	@	.22
No. 3	.19	@	.20
A. Italian, 18 basis	.38	@	.39
Finished Jute—			
Dark 18 basis	.20½	@	.21
Light 18 basis	.22½	@	—
Jute Wrapping, 3-6 Ply—			
No. 1	.14¼	@	—
No. 2	.13¼	@	—
Tube Rope—			
4-ply and larger	.10¼	@	—
Fine Tube Rope—			
4-ply	.12¾	@	—
3-ply	.13¾	@	—
2-ply	.14¾	@	—
Paper Makers Twine Balls	.08¾	@	—
Box Twine, Z-3 ply	.09	@	.10
Jute Rope	.11	@	.12
Amer. Hemp, 6	.29	@	.31
Java Sisal			
No. 1 Basis	.12	@	—
No. 2 Basis	.11¾	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Twine	.22½	@	.24½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	—	@	—
No. 1 Soft Shavings	2.10	@	2.15
Ledger & Writings	.70	@	.75
Solid Books	.75	@	.80
Blanks	1.60	@	1.65
Krafts	1.30	@	1.40
New Kraft Cuts	1.40	@	1.50
Manila Env. Cuts	1.50	@	1.55
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.28	@	.30
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.08	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.09	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.09	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03½	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03½	@	.04
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03½
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	32.50	@	35.00
Chip Board	30.00	@	32.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00	@	—
No. 2, per ton	70.00	@	—
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.09	@	.09½
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesias, soft	.05	@	.05½
New Unbleached	.08½	@	.09
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05	@	.05½
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Domestic Rags (Old)

White No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
M. G.	6.00	@	—
Thirds and Blues—			
Miscellaneous	1.60	@	1.80
Repacked	2.00	@	2.25
Black Stockings (Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.25	@	1.30
Repacked	.80	@	.90

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.65	@	2.75
No. 2 Hard White	2.30	@	2.50
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.70
Solid Ledger Stock	1.55	@	1.65
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.15
No. 2 Books, light	.90	@	.95
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.35	@	1.40
Common Paper	.25	@	.35
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.45	@	.50
Old Newspaper	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06⅛
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¼	@	.05½
No. 2 Kraft	.03¾	@	.05

(Less car-freight to Boston)

Southern Kraft	—	@	3.35

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

Delivered New England points

News Print, rolls	61.50	@	—
Straw Board, rolls	.009	@	52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	32.50	@	—
Chip Board	30.00	@	—
Chip Board (Creasing)	32.50	@	—
Single Manila Lined Chip	45.00	@	—
Single White, Patent Coated News Board Bender, No. 1	60.00	@	75.00
Single White, Patent Coated News Board Bender, No. 2	55.00	@	65.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	67.50	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	—	@	2.40
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.65
Solid Ledger Stock	—	@	1.75
No. 1 Books, heavy	.75	@	.80
No. 1 Books, light	—	@	.65
Crumpled Stitchless Book Stock	—	@	.70
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	1.00	@	1.10
Manila	.80	@	.90
No. 1 Mixed Paper	—	@	.16
Overissue News	—	@	.40
Old Newspapers	.25	@	.30
Box Board, Chip	.16	@	.20
Corrugated Boxes	.35	@	.40

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.80
Domestic	1.60	@	—
Manila Rope—			
Foreign	2.50	@	—
Domestic	—	@	3.00
Transmission Rope	2.00	@	—
Mixed Strings	.75	@	.85
Jute Rope	—	@	1.05
Jute Carpet Threads	.90	@	1.05
Bleachery Burlap	—	@	3.25
No. 1 Scrap Burlap	—	@	1.25
Scrap Sisal	1.35	@	1.40
Scrap Sisal for shredding	—	@	1.50
Wool Tares, heavy	—	@	1.40
New Burlap Cutting	1.75	@	2.00
Australian Pouches	2.50	@	—
Heavy Baling Bagging	—	@	1.75
Paper Mill Bagging	—	@	.85
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.06½	@	.07
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	1.90
Black Stockings	3.65	@	4.00
Roofing Stock—			
No. 1	.90	@	.95
No. 2	.65	@	.70
No. 3	.50	@	.60
No. 4	—	@	.60

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.75	@	—
New No. 1 White Shirt Cuttings	7.50	@	8.00
Dutch Blues	—	@	1.80
New Checks & Blues	4.25	@	4.60
Old Fustians	1.65	@	1.65
Old Linsey Garments	.75	@	.85

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.09¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.09½	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	4.00	@	5.75
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 4 S. C. (carloads)	6.25	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	70.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.80	@	—
Soft White	2.60	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.10	@	—
Light and Crumpled Book Stock	1.20	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.80	@	—
Kraft	1.90	@	—
News and Scrap—			
Strictly Overissue	.70	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06½

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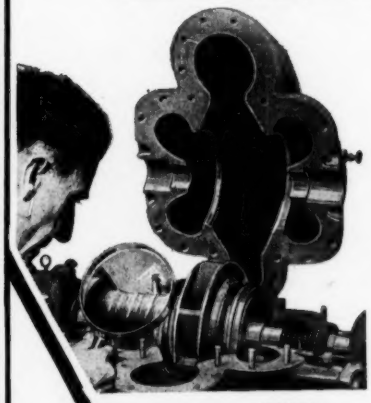

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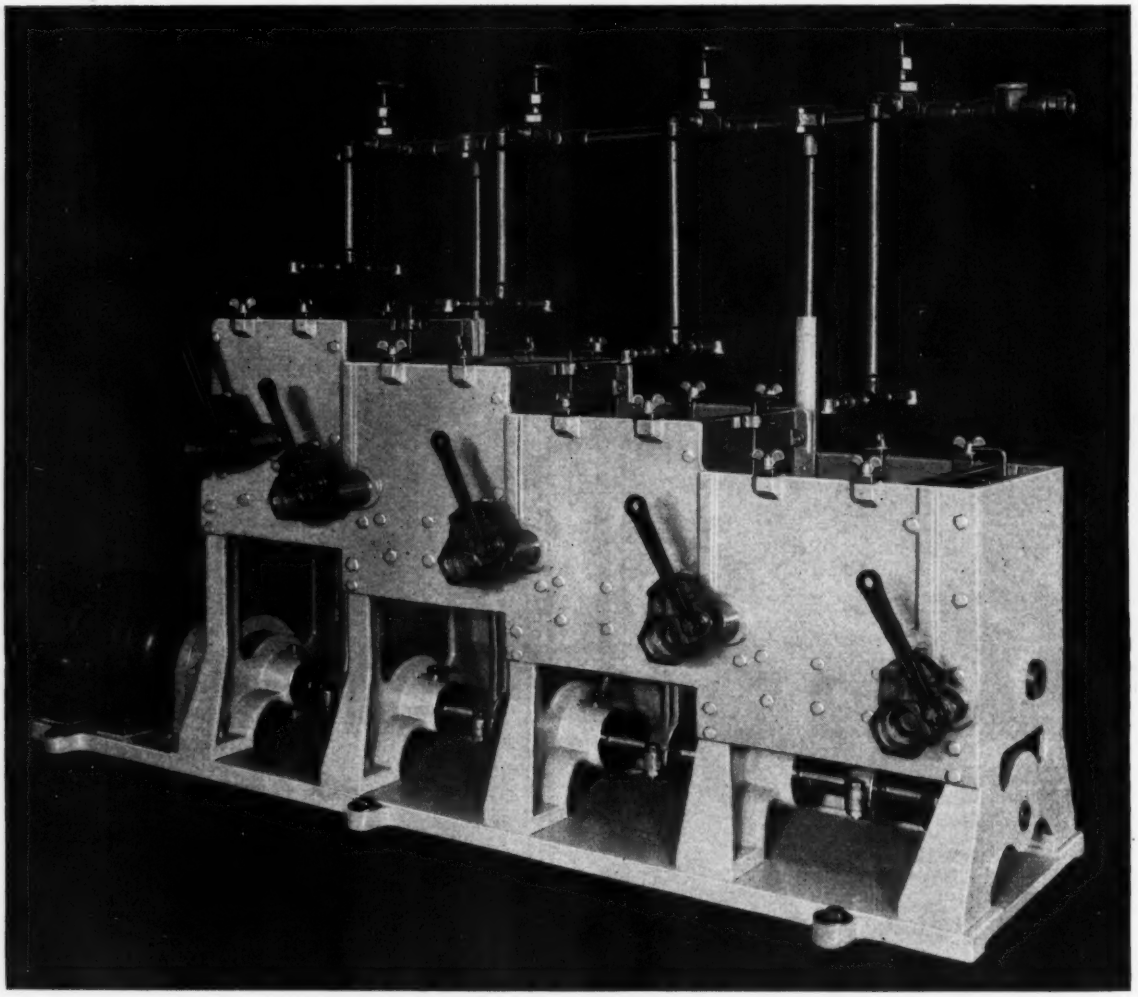

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